



VOL. XXXII.

CLEVELAND, AUGUST 10, 1905.

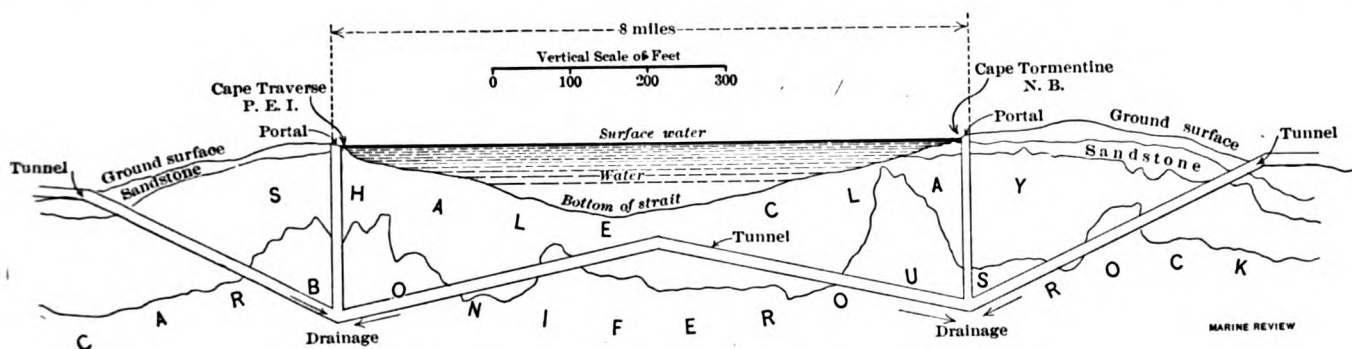
No. 6.

TUNNEL UNDER STRAITS

The accompanying engraving is an approximate profile of the proposed tunnel to connect Cape Traverse at Prince Edward Island with Cape Tormentine, N. B., a distance of eight miles. It is quite a gigantic undertaking and will cost from ten to fifteen millions. The profile is made from the report of the tunnel surveys made by Sir Douglas Fox, C. E., of London, and Francis Bain, geologist, and may be considered tolerably approximate. Further surveys for this work will likely be begun this summer by the government, who are bound by the company of the confederacy to maintain daily communication, sum-

INTERNATIONAL WATERWAYS COMMISSION

The international waterways commission held an important session at Montreal recently. J. P. Maybee, K. C., chairman of the Canadian section occupied the chair. The Lake Erie dam matter was taken up and a memorial was presented by J. A. Cuttle, president of the Dominion Marine Association. He stated that the association represented most of the tonnage interested in the navigation of the lakes and upper St. Lawrence, the fleets composing the association aggregating 112,000 net tons. Having regard for the St. Lawrence as a natural passage from the great lakes to the sea, and now used by a large and



TUNNEL UNDER STRAITS FROM CAPE TRAVERSE TO CAPE TORMENTINE.

mer and winter, between the island and the mainland. This communication has been made after a fashion with ice-breaking steamers in winter, but with very poor results. This last winter there were fifty-nine days during which the boats could not run, the only mails being obtained by small ice boats drawn by hand.

It is expected the tunnel will be begun as soon as complete surveys and geological investigations are obtained this summer. From the report of the English engineer no great difficulties are anticipated in the construction of the tunnel. Including the approaches the tunnel will be between 9 and 10 miles long, while the portion under the construction will be $7\frac{1}{2}$ nautical miles or 8 statute miles. An offer of ten millions has already been made by a responsible contractor to do the work without further investigation. The information incorporated in this article has been obtained from Mr. J. A. Macdonald, Hermanville, Prince Edward Island.

constantly increasing number of vessels, many of them full canal size and heavy tonnage, and having regard also to the narrow margin of safety in the navigation of certain parts of the harbors, channels and canals on the route and the necessity for maintaining the levels at least at the present standard, it was believed that any lowering of the water in this route would not only be exceedingly detrimental to the trade interests directly involved, but would also sacrifice the rights of the much larger number who enjoy indirectly as well as directly the benefits of this great water highway.

Col. Ernst, chairman of the American section, repudiated any desire to do anything to hurt the St. Lawrence route. It was with a good deal of surprise and some chagrin that he had noticed that there was a disposition in some quarters to suppose that American engineers would favor a plan that would hurt the route. No such plan would be entertained for a moment. There was an

idea, however, and not by any means a new idea, that something could be done at the outlet of Lake Erie to raise the level of the water and improve conditions for shipping on that lake, that would be of mutual advantage to the two countries. Canadians must remember that the St. Lawrence did not belong to them alone. "It belongs to us," he exclaimed; "it belongs to the world; it belongs to the whole human race."

If they could help the shippers on Lake Erie without hurting those below, he believed it would be of advantage to all. "But," he concluded, "to do anything in Lake Erie that would hurt the St. Lawrence would be a crime against humanity."

A. Monro Grier, representing the Canadian Power Co.; H. H. Macrae, representing the Electrical Development Co., of Ontario, who with Mr. Baker and H. Paine represented the electrical interest, as well as James Wilson, commissioner of Queen Victoria Park, spoke strongly in favor of a sitting of the commission at or near Niagara Falls.

Mr. Maybee declared the commission would sit at Niagara Falls at a date of which sufficient notice would be given.

BRITISH AND GERMAN TONNAGE

The following report on the changes that have taken place in the tonnage of Great Britain and Germany the past twenty years is furnished by Consul-General Guenther, of Frankfort, Germany:

During the last twenty years a great change has taken place as to the tonnage of all the larger sea-transportation companies of England and Germany. Among the twenty-five English and six German companies with more than 100,000 gross register tonnage each, there is but one, the English Anchor Line, whose tonnage now is less than it was in 1884. Among the English companies the British India Steam Navigation Co. heads the list with 446,000 gross register tonnage. In 1884 it had 174,000 gross register tonnage and was second only to the Peninsular & Oriental Steam Navigation Co., which today occupies third place.

The English White Star Line, second on the list of today, had only 58,000 gross register tonnage in 1884, occupying the eleventh place; since then it has increased its tonnage to 388,000 gross register tonnage. This considerable amount is divided among thirty-one vessels, so that the average tonnage of each White Star steamer is about 12,000 gross register tons. The White Star Line can boast that, as far as the average tonnage of its vessels is concerned, it is unsurpassed by any other company in the world.

Next in tonnage follows the Peninsular & Oriental Co. Its fleet, which in 1884 had more than 175,000 gross register tonnage, and was then considered the greatest navigation company in the world, has for the last few years been steadily receding; it, however, still has a gross register tonnage of 326,000 tons, nearly double that of 1884.

The next greatest company, Elder Dempster Co., had at one time a greater tonnage than in 1904, otherwise it resembles the White Star Line in rapid growth. Its present tonnage of 312,000 gross register tons is about seven times as large as its tonnage in 1884. The Union Castle Line is a fusion of two companies, the Union and the Castle lines, which in 1884 had an aggregate tonnage of 95,000 gross register tons. Today it has 298,000 gross register tons. Then follow five companies of about the same tonnage each—the Leyland Line, with 261,000 gross register tons (53,000 in 1884); the Ellerman Line, less than twenty years old, with 260,000 gross register tons; Alfred

Holt & Co., with 254,000 (51,000 in 1884); the Cunard Line, with 254,000 (51,000 in 1884). This company had in 1903 only 148,000 gross register tonnage, but the new steamers built with governmental aid have raised it from fourteenth to ninth place among the English lines. Like the White Star Line, it uses almost exclusively large steamers, the average tonnage of which is 10,500.

The Elan Line, with 203,000 gross register tonnage (68,000 in 1884), closes the list of English companies with more than 200,000 gross register tonnage.

The German sea navigation companies consist of about 50 percent of the Hamburg-American Line and the North-German Lloyd.

Twenty years ago the Hamburg-American Line had a fleet of about 60,000 gross register tonnage. Today it owns a steamer fleet of 719,000 gross register tonnage, according to its last annual report. The North-German Lloyd had 103,000 gross register tonnage in 1884, which in 1904 had increased to 573,000. Both companies have therefore, in the short time of twenty years, surpassed all English lines. Today they stand at the head of all sea navigation companies in the world.

Third place among the German lines is occupied by the Hansa Co., which is about twenty years old and has 215,000 gross register tonnage. All the other German lines have less than 200,000 gross register tonnage. Only the Hamburg-South American, the German-Australian, and the Kosmos lines have more than 100,000 gross register tonnage each.

CRUISER PENNSYLVANIA'S PERFORMANCE

The armored cruiser Pennsylvania, built at Cramps, in charge of her regular complement of officers and men concluded her final acceptance trial last week. The cruiser was in command of Capt. T. C. McLean. The naval board of inspectors and surveyors consisted of Capt. James H. Dayton, president; Capt. H. C. Leutz, Capt. Joseph H. Woodward, Commodore Isaac B. R. Reeves and Commander Templin M. Potts. The cruiser was heavier by 800 tons than on the day of her official trial trip in November last, but she nevertheless maintained a speed of 22.08 knots for four hours. Upon her official trial with picked coal, a picked crew and fresh from her builders she maintained a speed of 22.43 knots. Mr. Edwin S. Cramp, who was on the cruiser, said that her performance was highly creditable to the crew in the engine and boiler rooms, the indicated horse power reaching a maximum of 30,150, and the average for four hours being 29,843. The boilers, of the Niclausse type, continuously furnished an abundance of steam. After the four-hour trial under forced draft there was an eight-hour steaming trial under natural draft with a resulting speed of 19.8 knots.

Several sailing vessels on the Pacific coast have been converted into oil carriers. Among them are the schooners Monterey and Santiago. The steamer Rosecrans, towing the Monterey laden with oil, reached Nome from San Francisco on July 9. The Santiago was towed from Monterey to San Francisco by the tug Dauntless, which is employed almost continuously in this work. The Santiago carried 22,000 barrels of crude oil in her tanks. The barkentine Fullerton is towed regularly between San Francisco and Honolulu.

The United States armored cruiser Maryland underwent a trial this week to standardize her propellers and compasses.

SCHERZER ROLLING LIFT BRIDGES

The great value, economy and importance of transportation by water has never before been brought so forcibly to the attention of the manufacturer, the merchant, the warehouse man, the shipper and the real estate or property owner as at the present time of enormously expanding internal and foreign commerce. It is realized that the railroad systems, owing to their inherent restrictions and limitations, are far from adequate to meet the demands of all classes of transportation. Vessel transportation is and will necessarily ever continue to be the most economical mode of transport, as vessels can be constructed in all sizes to meet the requirements of the special transportation interests to be served, whether it be 100 tons or 30,000 tons or even greater vessel capacity. Such large and varied units moving virtually without friction upon water are clearly impossible on wagon-roads or on railroads.

A vessel is not confined to a number of comparatively short routes, as is the case with the railroad, but has a virtually limitless number of routes at its service provided by the great oceans of the world combined with the many bays, rivers, inlets and canals to penetrate the interior. The rivers, inlets and canals are becoming of greater importance and value each day, as they form the connecting channels by which vessels can reach the commercial and industrial centers located in the interior, enabling vessels to obtain and also distribute their cargoes without delay or expensive rehandling. These internal waterways must and will necessarily ever increase in importance and value with the growth of population. They are indispensable as great internal connecting public highways. It is therefore essential not only that these rivers and waterways be improved, but that no artificial obstructions be placed in them which will impair, hamper or destroy their usefulness. This is true, even though at the present time the existing commerce may not be large, as no one can predict what the demands of the future will be.

A river of moderate width of channel can economically and safely carry more tonnage than a ten or twenty-track railroad. It is conse-

quently very essential in order to preserve and increase the prosperity of any community that its water transportation facilities be protected and improved, as vessels, unlike railroads, are free and unrestricted and go quickly to the community furnishing the best facilities.

The marvelous growth of the city of Greater New York is principally due to its splendid natural facilities afforded for water transportation, yet its growing commerce would rapidly halt and decline were it to delay or neglect in furnishing the most improved and modern facilities for the accommodation of its vessel traffic. Among these improvements is that of removing all obstructive center pier swing bridges from navigable channels

and the substitution therefor of the most modern type of movable bridge known as the Scherzer rolling lift bridge. The center pier swing bridge has always been objectionable to navigation interests because this type of bridge is supported by a large pier combined with

a long and wide protection pier which occupy and obstruct the middle and best part of the waterway, dividing the channel into two inadequate side channels where one wide adequate center channel is desired. This difficulty is overcome by using the modern Scherzer rolling lift bridge, which is supported on piers placed on the sides of the channel and when opened moves in a vertical direction leaving the channel free and unobstructed for the passage of vessels. It also has the advantage of moving more

rapidly when opened and also forming an effective bridge gate, guard and signal absolutely preventing accidents common to swing bridges when open such as vehicles and pedestrians falling into the open draw.

The Scherzer rolling lift bridge, owing to improvements and development caused by its very extensive use, also has the advantage of being more economical in cost of construction than a center pier swing bridge of similar capacity. In this issue we are enabled to present to our readers some illustrations showing four Scherzer rolling lift bridges recently constructed to take the place of four obstructive center pier swing bridges across Gowanus canal, Brooklyn. The new bridges are located at Hamilton avenue, Third street, Ninth street and Union street.

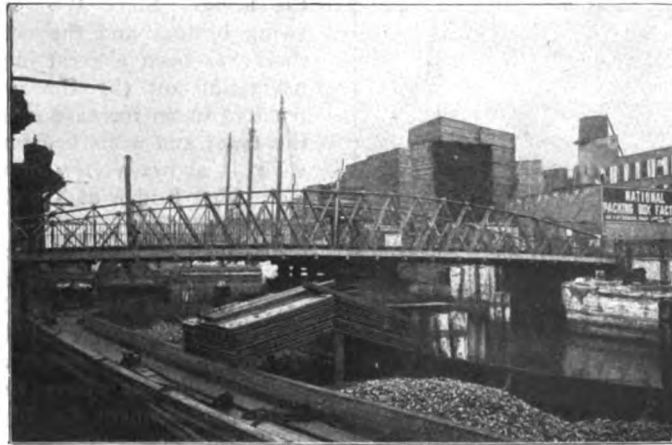


FIG. 1. OLD CENTER PIER SWING BRIDGE AT UNION STREET, BROOKLYN.



FIG. 2. SCHERZER ROLLING LIFT BRIDGE AT UNION STREET, BROOKLYN, CLOSED.



FIG. 3. SCHERZER ROLLING LIFT BRIDGE AT THIRD STREET, BROOKLYN, OPEN.

Fig. 1 shows the old center pier swing bridge at Union street and clearly illustrates the obstruction formed in

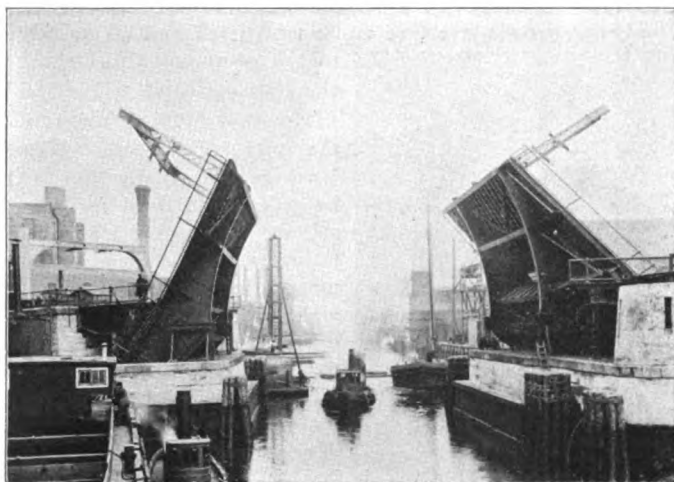


FIG. 4. SCHERZER ROLLING LIFT BRIDGE AT HAMILTON AVENUE, BROOKLYN, OPEN.

the channel by the center pier and protection fender barring the passage of many vessels.

Fig. 2 shows the new Scherzer rolling lift bridge at Union street in the closed position. It is a two leaf deck structure. The bottom of the bridge arched gives it a pleasing outline. This bridge carries a very heavy highway and electric car traffic. The water traffic on the canal is also very heavy and frequently requires the bridge to be opened more than thirty times daily. The bridge is operated by electrical power and is usually opened or closed in 20 seconds. It is operated by one man who controls the movement of both leaves of the bridge.

Fig. 3 shows the new Scherzer rolling lift bridge at Third street. The new bridge is shown in the open position for the passage of a tug and barge.

Fig. 4 shows the Hamilton avenue bridge in the open



FIG. 6. SCHERZER ROLLING LIFT BRIDGE AT THIRD STREET, BROOKLYN. VIEW OF ROADWAY.

position. This bridge is located near the mouth of the canal and crosses the channel at an acute angle. The roadway is elevated above the water sufficiently to allow the passage of tugs and small barges without opening the bridge. Since the removal of the old center pier swing bridges and the construction of the new bridges there has been a great improvement in the facilities for navigation on the Gowanus canal, which has already resulted in an increase in industries seeking locations on the canal and a marked improvement in property values.

Fig. 5 shows a view of the roadway of the old center pier swing bridge at Third street with trusses extending above the floor of the bridge. Owing to the narrow width of roadway and the obstructions to street traffic serious congestion was frequent.

Fig. 6 shows a view of the roadway of the new Scherzer rolling lift bridge at Third street, the bridge carrying the clear width of street across the canal and avoiding any obstructions above the surface of the street. The great improvement for highway traffic over the bridge is clearly illustrated in this comparison between the roadways of the old and new bridges illustrated in Figs. 5 and 6.

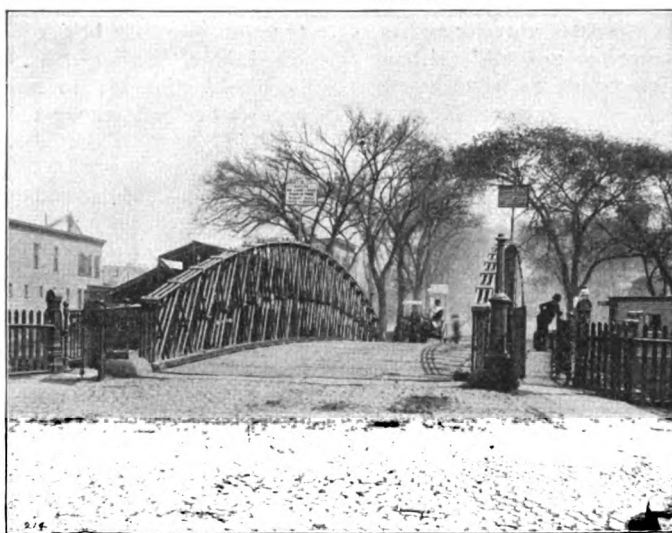


FIG. 5. OLD CENTER PIER SWING BRIDGE AT THIRD STREET, BROOKLYN. VIEW OF ROADWAY.

Fig. 7 shows a roadway view of the new Scherzer rolling lift bridge at Union street in the open position and illustrates how effectively the roadway is blocked against accidents.

Other Scherzer rolling lift bridges are under construction, superceding and replacing center pier swing bridges for Greater New York at Manhattan avenue across Newtown Creek waterway; also at Jackson avenue across Flushing Creek, and at Pelham Bay Park across Eastchester Bay. The center pier swing

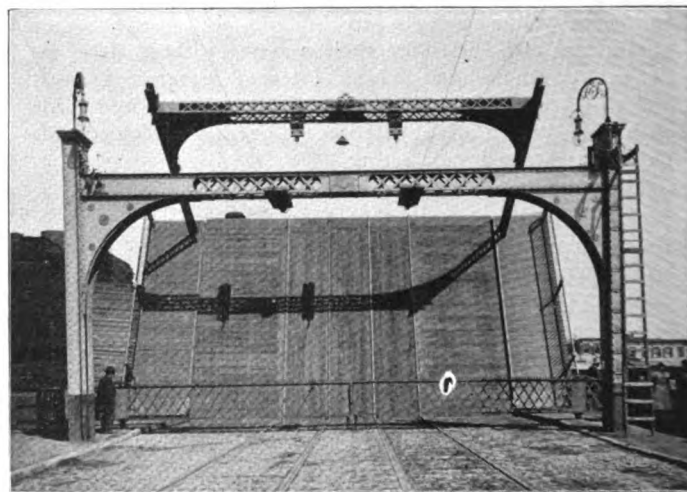


FIG. 7. SCHERZER ROLLING LIFT BRIDGE AT UNION STREET, BROOKLYN. ROADWAY BLOCKED AGAINST ACCIDENT BY OPEN BRIDGE.

bridge at Manhattan avenue across Newtown Creek waterway was extremely obstructive to navigation. Vessels

were frequently delayed one-half hour or more in passing through the narrow side channels. The large ocean going vessels were blocked from going through the draw.

The new Scherzer rolling lift bridge which is rapidly nearing completion remedies this condition completely, as it provides a clear channel for navigation 150 ft. wide measured between protection fenders. This wide clear channel enables the largest ocean-going vessels to pass the bridge easily and rapidly. The very extensive manufacturing and other interests located along Newtown Creek waterway are already realizing the benefits from this important improvement, and the work of removing the remaining center pier swing bridges will be undertaken as rapidly as possible.

FUTURE OF THE LAKE FLEET

Buffalo, Aug. 8.—The future of the lake fleet, as affected by supply and demand, is always one of the leading topics and matters of concern with lake men, and there is a special reason for this from several standpoints. The chief outside reason for this is that of curiosity bordering on astonishment. No industry that we know anything about has developed so fast, and none has maintained so well the sort of staggering gait that has characterized it for the last score of years. There have been many times when the most sanguine and the most experienced have predicted disaster on account of overbuilding, but there has been little of that sort of experience yet.

The difficulty facing us now is on account of the sudden appearance of heavy carriers, which are crowding the smaller ones to the wall. Their influence on business at this port is shown largely in the hard-coal trade. It used to be common for the tonnage to be needed so largely in grain or ore, or the soft-coal ports needed it so entirely that a sharp advance in rates was necessary to bring boats enough here to take care of the coal offered and as it was then fairly unheard of for down cargoes to give out, there was business in plenty in both directions and profits were sure.

But the carriers of 5,000 tons capacity and more, have changed all that, as has been amply proven here this season. The coal shippers understand it and take entire possession of the situation. They begin by offering a moderate rate at the opening of the season, considerably lower of course than it used to be, and they figure on shipping pretty nearly all their coal for the season on that rate. The sliding-scale of prices has helped the idea considerably, as it has induced the smaller ports to buy early and not wait to bunch their orders in October. With the old style of selling on a uniform price it was common for the old fleet to push up rates early in the fall and sometimes at any time whenever it was found that coal was accumulating on the docks here.

It can no longer be done. For instance early in July the coal shipments ran down to about a third of what they had been averaging in May and June. The shippers made no effort to cut down the rates, for they did not consider them high, and besides they like a steady rate, as it facilitates the fixing of prices and the keeping of books. With it they know beforehand how much the coal will cost them at upper-lake ports. Then the big carriers come to the rescue and make uniform rates on coal easy. When there was a shortage of coal the big fellows went up light and asked for no coal, but when, late in July and continuing into August, the coal supply ran up again, the big carriers took a load of 6,000 to 9,000 tons occasionally and the rates remained unchanged. This is a fine thing for the business as a whole, but it helps kill off the small carriers, for they are entirely at

the mercy of the shippers. If they will not accept the regular rates the big carriers will and they can tie up.

I find that opinions differ as to the effect on the lake trade of the big additions to be made to the lake fleet next season. Looked at on the basis of this season's business and it would be expected to swamp the entire fleet of 4,000 tons capacity or less, but there is going to be much more grain to carry than there is now and the amount of ore will increase a good deal, if the business in iron continues. As against the estimate that we shall bring down 28,000,000 to 30,000,000 tons of ore this season it is estimated that there will be an average of 40,000,000 tons established inside of five years. If other freight-stuffs do not increase at all, here is a large extra amount to move.

There is a stir among the lumber carriers that means practically the same thing that it does in the ore, coal and grain trade. Vessel owners are saying that it is still possible to make something with a vessel carrying a million feet of lumber, where one of 700,000 ft. capacity or so would starve. The lumber fleet suffered primarily by the setting up of a few big fleets by upper-lake men who usually had their own lumber to carry, but they handle for the most part the old-style wooden boat, which must go out in a short time. Then there will be something in the business again for the big steel lumber carrier, so long as the lumber supply keeps up reasonably, which will not be long. The small carriers will be gone and the others can go into ore.

So the future of the lake fleet is soon to be resolved down into a large amount of tonnage in 500-footers, a moderate amount of the smaller sizes, all able to make a living and the size and growing importance of the lesser lake ports to determine how many of the smaller craft is needed. We note as a sort of oddity that influence from New York city is trying to secure a possible depth of 14 ft. in the enlarged Erie canal, entirely oblivious that such craft is already disappearing from the lakes.

JOHN CHAMBERLIN.

On July 25, at 3 a. m., the Norwegian steamer Tricolor, bound from British Columbia to San Francisco with a cargo of 6,500 tons of coal, went ashore almost within a stone's throw of the Cape Mendocino lighthouse, off the coast of central California. The master and crew, with the ship's log, the instruments and some baggage, food and water, fearing that the vessel would be pounded to pieces by the breakers, put off in three boats and in a few hours reached the lightship, where they remained till taken off by the tug Ranger and conveyed to Eureka. The weather was very foggy and the captain attributes the disaster to the fact that the whistle on the Mendocino lightship was not in operation. He says that the whistle is of no use to mariners, as it is placed too low and between deck houses, which deadens its sound.

The steamer Chico recently towed a barge, formerly the ship Tidal Wave, from Fort Bragg to San Francisco, the barge carrying 600,000 feet of lumber. The old ship Dashing Wave is now a barge and was recently towed to Nome with a load of cattle by the steamer Elihu Thomson. In a heavy gale the towline parted, but by good fortune the barge was recovered and the cattle saved.

The boiler shop of Theodore Smith & Sons Co., Morris street, Jersey City, the Brown Dry Dock Co., adjoining, and the James McWilliams Towing Co. were severely damaged in a fire last week. The total loss will reach \$100,000.



DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED
OR ASSOCIATED WITH MARINE MATTERS
ON THE FACE OF THE EARTH.

Published every Thursday by

The Penton Publishing Company
CLEVELAND.

CHICAGO:	MONADNOCK BUILDING.
PITTSBURG:	PARK BUILDING.
NEW YORK:	150 NASSAU STREET.

*Correspondence on Marine Engineering, Shipbuilding and
Shipping Subjects Solicited.*

Subscription, \$3.00 per annum. To Foreign Countries, \$4.50.
Subscribers can have addresses changed at will.

Change of advertising copy must reach this office on Thursday preced-
ing date of publication.

The Cleveland News Co. will supply the trade with the **MARINE REVIEW**
through the regular channels of the American News Co.

European Agents, The International News Company, Breems Building,
Chancery Lane, London, E. C. England.

Entered at the Post Office at Cleveland, Ohio, as
Second Class Matter.

AUGUST 10, 1905.

The measure of commerce of the great lakes is the canals at Sault Ste. Marie, passing through three locks, two on the American side and one on the Canadian side. The American locks are known as the Poe and Weitzel locks, of which the Poe lock is the greatest, being 800 ft. long and 100 ft. wide. The lock of the Canadian canal is 900 ft. long and 60 ft. wide. Plans have now been prepared for another lock on the American side to be 70 ft. wide and 1,300 ft. long. The Poe lock was begun in 1887 and it was intended at that time to be large enough to lock through four modern steamers at one time. It was completed in 1896, by which time commerce had grown so great that only two steamers could be locked through at one time. The increase in mean dimensions has been such since that only one steamer can be locked through at a time now. The man who designed this lock is, by common consent held to be the greatest engineer that has ever had anything to do with the channels of the great lakes. He was not only a great constructive genius, but he possessed in an eminent degree, the quality of imagination, and was forever building for the future. No man, who has not imagination can reckon with the growth of lake commerce. Gen. Poe was conscious of its great

development. It was his imagination that caused him to design a lock of such staggering proportions. Notwithstanding the fact that he was well in advance of his time; notwithstanding the fact that he was well aware of the almost geometrical progression of lake commerce; notwithstanding the fact that in 1891 he wrote the following words, which are now prophetic, "For 35 years I have watched the increase of the great lakes commerce, but neither I nor any one else has been able to expand in ideas at the same rate. The wildest expectations of one year seem absurdly tame by the side of the actual facts of the next"; notwithstanding the fact that he knew every one had erred in underestimating lake commerce, he lived to see that his own vaulting imagination had also undershot the mark.

The great Canadian lock, a magnificent structure, was completed almost simultaneously with the Poe lock. Today there is a ship on the stocks that when completed will not be able to pass through this great lock at all. The width of the Canadian lock is 60 ft. The width of the steamer Wm. G. Mather, now building, is 60 ft. It would seem as though a new lock 70 ft. wide and 1,300 ft. long would be ample for the future. If it is to be criticized at all, it is on account of its width. The maximum beam of ships on the great lakes has been 56 ft., but if it is feasible to build and operate one of 60 ft., why not one of greater beam, since the carrying capacity of a ship is measured more by beam than length? However, there is also to be considered the question of economical dimensions. These lock chambers are being continuously filled and emptied, and it would be extravagance to have one of greater cubical capacity than is absolutely necessary. But the point of width is worth considering. There was some talk at the last Lake Carriers' meeting, of a ship of 75 ft. beam. Whether such a ship would adapt itself to the unloading equipment is questionable. But in the words that Poe has so eloquently expressed his thought—"that the wildest expectations of one year are absurdly tame by the side of the actual facts of the next"—it is well to look broadly at the question, and if to err at all, to err on the side of the greatest magnificence.

HOOVER & MASON MAIDEN CARGO

The maiden cargo of the new Tomlinson steamer Hoover & Mason consisted of 9,810 tons and was carried from Duluth to South Chicago. Owing to the fact that the unloading rate on the South Chicago docks was not in good working order no effort was made to establish an unloading record or to determine the advantages which this type of construction has over the ordinary type in unloading. The South Chicago docks are completely equipped with the Hoover & Mason outfit and are the most complete of their kind in the world. A number of shipbuilders, vessel owners and dock managers were present to witness the unloading operation, but the real test was deferred until the equipment could be brought into better shape.

SAULT STE. MARIE CANAL COMMERCE

The July record of tonnage passing through the Sault Ste. Marie canal is the greatest that has ever been reached. The freight carried through the canal during July was 6,705,760 net tons, as against 5,609,079 net tons for the same month last year. The total up to Aug. 1 is 19,837,204 net tons, as against 9,198,203 net tons for the corresponding period last year and 17,224,362 tons for the corresponding period during 1903. At the present rate the total traffic for the season will readily exceed 40,000,000 tons. Following is given the statistical summary showing the various articles transported to Aug. 1, with tables for 1903 and 1904 given for purposes of comparison:

MOVEMENT OF PRINCIPAL ITEMS OF FREIGHT TO AND FROM LAKE SUPERIOR.

Items	To Aug. 1 1905	To Aug. 1 1904	To Aug. 1 1903
Coal anthracite, net tons	436,972	359,768	431,165
Coal, bituminous, net tons	2,513,601	1,208,211	3,137,871
Iron ore, net tons	14,856,053	4,963,739	11,191,907
Wheat, bushels	13,607,165	15,699,162	25,576,276
Flour, barrels	1,640,803	1,075,100	3,173,240

REPORT OF FREIGHT AND PASSENGER TRAFFIC TO AND FROM LAKE SUPERIOR, FROM OPENING OF NAVIGATION TO AUG. 1 OF EACH YEAR FOR THREE YEARS PAST.

EAST BOUND.

Items	To Aug. 1, 1905.	To Aug. 1, 1904.	To Aug. 1, 1903.
Copper, net tons	45,735	34,033	43,945
Grain, other than wheat, bushels	10,711,366	7,278,334	9,959,467
Building stone, net tons	7,038	4,227	4,590
Flour, barrels	1,638,628	1,075,100	3,173,210
Iron ore, net tons	14,856,053	4,963,739	11,191,907
Iron, pig, net tons	31,305	13,317	4,194
Lumber, M. ft. B. M.	424,985	343,016	423,375
Silver ore, net tons		919	
Wheat, bushels	13,607,165	15,699,162	25,576,276
Unclassified freight, net tons	44,758	39,912	37,651
Passengers, number	12,128	7,053	15,401

WEST BOUND

Coal anthracite, net tons	436,972	359,768	431,165
Coal, bituminous, net tons	2,513,601	1,208,211	3,137,871
Flour, barrels	7,175		30
Grain, bushels	68	625	
Manufactured iron, net tons	52,518	46,762	65,173
Salt, barrels	224,720	169,258	208,674
Unclassified freight, net tons	309,691	201,451	233,574
Passengers, number	13,727	7,798	15,478

SUMMARY OF TOTAL FREIGHT MOVEMENT IN TONS.

	To Aug. 1, 1905.	To Aug. 1, 1904.	To Aug. 1, 1903.
East bound freight, all kinds, net tons	16,490,111	6,356,669	13,324,614
West bound freight, all kinds, net tons	3,347,093	2,841,534	3,869,748
Total freight, net tons	19,837,204	9,198,203	17,224,362

Total number of passages to Aug 1, 1905, was, 9,989, and the registered tonnage, 16,672,165.

GREAT MOVEMENT OF IRON ORE

The iron ore trade of the great lakes reached its maximum movement in July, when 5,224,620 tons were moved from upper lake ports, as against 3,895,835 tons in July last year. The increase of the present July over last is therefore 1,328,785 tons, or 34.11 percent. The total movement to Aug. 1 of the present year has been 16,038,674 tons, as against 5,554,402 tons to Aug. 1, 1904, an increase of 10,484,272 tons over last year, or 186 percent. The shipments by ports during July and up to Aug. 1 have been as follows:

Port.	July, 1904.	July, 1905.
Escanaba	671,496	784,242
Gladstone		
Marquette	319,558	442,593
Ashland	376,965	524,915
Superior	756,268	832,626
Duluth	923,811	1,408,917
Two Harbors	847,737	1,231,327
	3,895,835	5,224,620
1905 Increase		1,328,785

Port.	To Aug. 1, 1904.	To Aug. 1, 1905.
Escanaba	986,552	2,521,613
Gladstone	480	
Marquette	451,838	1,460,526
Ashland	528,926	1,647,167
Superior	1,109,189	2,467,029
Duluth	1,283,829	4,155,935
Two Harbors	1,193,588	8,786,404
	5,554,402	16,038,674
1905 Increase		10,484,272

This tremendous movement has been secured in the face of obstacles. During the early part of the month a number of the great open pits of the Mesabi range were flooded and there was also a serious delay on one of the railroads owing to an accident. This great movement has been secured also in the face of considerable shifting to get cargoes at upper lake docks. There has been an unusual amount of this to the discomfort of certain masters. Dispatch at lower lake ports, however, has been phenomenal and a greater proportion than ever has gone into cars. In fact, some of the giant ships have unloaded their entire cargo into cars at record-breaking speed.

The grain rate has sensibly increased and will probably hereafter attract considerable tonnage. Coal is moving rather slowly.

AROUND THE GREAT LAKES

While running alongside the steamer Socapa last week to take off Oscar Gems, the mate of the steamer, who was ill, a rowboat in charge of Dennis Lynn was drawn into the propeller of the steamer and crushed to pieces. Both men were thrown into the water but Lynn, who is an expert swimmer, succeeded in keeping the sick man afloat in the swift current until assistance arrived.

The steamer George Presley, operated by the Mona Transportation Co. of Cleveland, bound from Milwaukee to Escanaba for ore, was discovered to be on fire while the steamer was off Washington island. She was beached and burned to the water's edge. The Presley was built by the Globe Dry Dock Co. of Cleveland in 1889. She was 265 ft. keel and 41 ft. beam and was insured for \$70,000.

Mr. J. F. Hayes, chief engineer of the Wolvin fleet and the Board of Naval Experts, went up the lakes last week on the steamer James C. Wallace to inspect a new system of superheating in the boiler rooms. The device is controlled by the Babcock & Wilcox Co., of New York. The naval men comprised a board of the bureau of steam engineering, including Com'dr W. W. White, B. C. Bryan and Lieut. H. T. Wingate.

It is understood that an agitation has been started at Montreal for lower charges from lake steamers to ocean ships. The charge is now about 1 1-3 cents per bushel, or practically a third the cost of its transportation from Chicago to Montreal. Shippers believe that this transfer charge is out of all proportion to the transport charge and that by reason of it Canada is losing half the advantage of the free government canals.

Work on the big turning basin in the north branch of the Chicago river has been practically completed by the Chicago & Great Lakes Dredge & Dock Co., and the largest vessels on the lakes could now be turned were it possible for such a ship to navigate the lower portion of the river. The basin is at the north end of Goose Island and is 850 ft. long by 650 ft. wide, after 400,000 cubic yards of material were removed by the dredges. Within a few days contractors will begin work upon the south branch basin at the junction of the south fork and south branch.

Sault Canal Celebration



MR. CHARLES T. HARVEY, CHIEF MARSHAL, HEADING THE MILITARY PARADE.

Peter White was detailing the growth of lake commerce, its magnitude and wonderful expansion, the development of vessel property from the small schooner to the giant steamer, when just as he spoke the steamer Saxon, up-bound, entered the canal with the ease and silence and caution that had marked the same passage of the Indian canoe half a century ago. The speaker's back was turned and he did not see the living stereopticon that was illustrating his very words, but the thousands who were facing him saw it and were greatly impressed.

The Semi-Centennial celebration of the completion of the first canal at Sault Ste. Marie to commerce was held on Wednesday and Thursday of last week and was attended by several thousand citizens. The semi-centennial celebration was under the direction of a commission consisting of the Hon. Peter White of Marquette, Mich., Horace M. Oren, of Sault Ste. Marie, and Mr. Charles Moore of Detroit. Mr. Charles T. Harvey, who built the first canal and whose locks were continuously in use from 1855 to 1887, acted as chief marshal of the occasion. The attendance of vessel and iron ore interests was surprisingly small, being represented only by W. G. Mather, J. H. Sheadle, Capt. J. C. Gilchrist, Capt. James Stone of Cleveland, John R. Russel, Detroit, and J. C. Evans, Buffalo. Miss Betty Poe, daughter of the late Gen. Poe, was an interested guest. At sunrise on Wednesday morning a naval salute was given by the government fleet in the harbor. At nine o'clock the band concert began in the Old Fort Brady park on the canal front, and was participated in by the regimental band, First United States Infantry, the band of the Third Michigan National Guard, and the Cal-

umet & Hecla band. Simultaneously began the naval parade through the locks, making a very effective display, as will be seen from the accompanying photographs. This parade was under the command of the Hon. Peter White, created admiral of the day, and whose flag flew from the masthead of the Marigold. It was unfortunate that there were no giant freighters to join the procession, but notwithstanding their absence the effect was impressive. The first squadron consisted of the United States steamers Marigold, Tuscarora, Morrell and Mackinac, accompanied by a fleet of other vessels. These vessels were locked through the great Poe lock. It is interesting to state that they were all locked through at once. They then proceeded across the St. Mary's river above the rapids and passed down through the Canadian ship canal and locks. The parade was then joined by every conceivable craft in the harbor passing in review and exchanging salutes with the gunboat Wolverine and the Michigan Naval Reserve steamer Yantic.

The military parade of the afternoon, was under the direction of Mr. Charles T. Harvey, chief marshal. It was headed by the First United States Infantry band and followed by a battalion of regulars from Fort Brady. The balance of the military display was made up of the state troops of Michigan. It was interesting to note the difference in deportment between the state troops and the regulars. The regulars marched with their eyes straight ahead, glancing neither to the right nor left and apparently oblivious to the fact that they were on parade. The state troops, however, had eyes for every one along the sidewalk.

Vice President Fairbanks with Gov-



SHOWING VICE PRESIDENT FAIRBANKS, GOV. WARNER, CONGRESSMAN BURTON, SENATOR BURROWS AND WILLIAM LIVINGSTONE IN THE FOREGROUND IN THE SPEAKERS' STAND.

[Copyrighted 1905 by Detroit Publishing Co.]

ernor Warner of Michigan, headed the list of carriages which contained the distinguished visitors, the members of the senate and the house of representatives of Michigan and other state officials. The parade was reviewed by the vice president of the United States and the governor of Michigan from the reviewing stand at Old Fort Brady on the canal.

The latter part of the afternoon was given over to an exhibition of Indian life by a few Ojibway Indians, who had built their teepees on the canal park. The Indians all, men, women and children, presented an admirable appearance. Their performance was under the general direction of Mr. W. O. Armstrong of Montreal, who has done much to preserve the record of Indian life as it existed in the peninsula prior to the advent of the white man.

Wednesday was given over to band concerts and fireworks. It must be admitted that in this particular the Ca-

nadians did far better than the Americans. They gave a magnificent display of fireworks, which was enjoyed by thousands long after the last rocket had been shot off on the United States side. As a concluding piece the Lake Superior Corporation illumined its great rail mill from one end to the other with innumerable incandescent lights, marking the outline of the building completely and repeating it on the following evening also.

The commemorative exercises were held in the speakers' stand in the south park of the canal on Thursday. The invocation was given by Archdeacon Arthur H. Lord of Sault Ste. Marie, and in the absence of Mayor Frank Perry, the Hon. Chase S. Osborn of Sault Ste. Marie delivered the address of welcome. Mr. Osborn was especially felicitous and happy in his remarks, particularly in reference to the great, black business batteaux of 10,000 tons that have taken the place of canoes of the voyageurs. He said:

"In behalf of the mayor and in the name of all the people of Sault Ste. Marie, I proclaim to all of the assembled visitors a heartfelt welcome. We are gathered in a spirit of mingled pride, hopefulness and thankfulness—pride in what has been achieved in the way of material growth, hopefulness that the future will repeat in an enlarged way the record of the past and thankfulness that we live in a land of the most expansive liberty, where desire and ambition are the kindred of necessity and accomplishment. It is fitting that the Dominion of Canada participates in this occasion. Her interests and sympathies are inseparable from ours in all of this momentous border growth.

We are all happy in having here some of the sturdy pioneers who with mind and heart and arm pointed and forced the way in the days when it was harder to do things than it is now. This great work here is a monument to their

efficient citizenship. The men who are here today in their great 500-ft. 10,000-ton steam batteaux are inspired by the same eager ambition that fired the souls of the voyageurs centuries ago.

"Welcome all and come again to this land in the sun bright deep where the golden gardens grow, where the

winds of the north becalmed in their sleep their conch shells never blow. So near to the track of the stars are we that oft on night's pale beams, the distant sounds of their harmony come to our ears like dreams. The moon, too brings its world so nigh that when the night-seer looks to that shadowless orb in the August sky, he can number its hills and brooks. To God of all our hearts and lyres, by day and by night belong. The breath we draw from His living fires we give to him back in song. The tumbling waters on their way to the emerald ocean as they play among the rocks of St. Mary's Falls sing to you a song of ten thousand welcomes."

The Hon. Peter White, who presided, then introduced Gov. Fred M. Warner of Michigan who read an address upon the subject, "The State of Michigan and the Building of the St. Mary's Canal." Gov. Warner said:

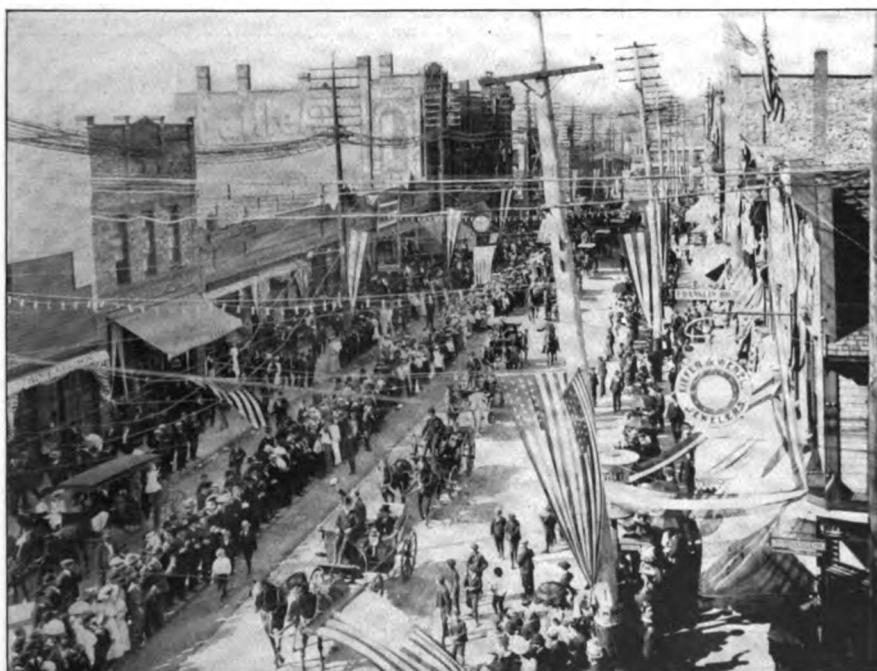
"The great work, the completion of which we are now commemorating, is one of the connecting links between the governments of our nation and our state. Fostered by both, the construction and improvement of the St. Mary's ship canal have borne no small part in maintaining the interest which the government at Washington has in our commonwealth.

As we look upon conditions as they exist today, and consider the wonderful development of our state and the commercial relations which have been established between Michigan and the entire world beyond our borders, we too often overlook the agencies which have brought



INDIAN TEPEES AT SAULT CANAL CELEBRATION.

(Copyrighted 1905 by Detroit Publishing Co.)



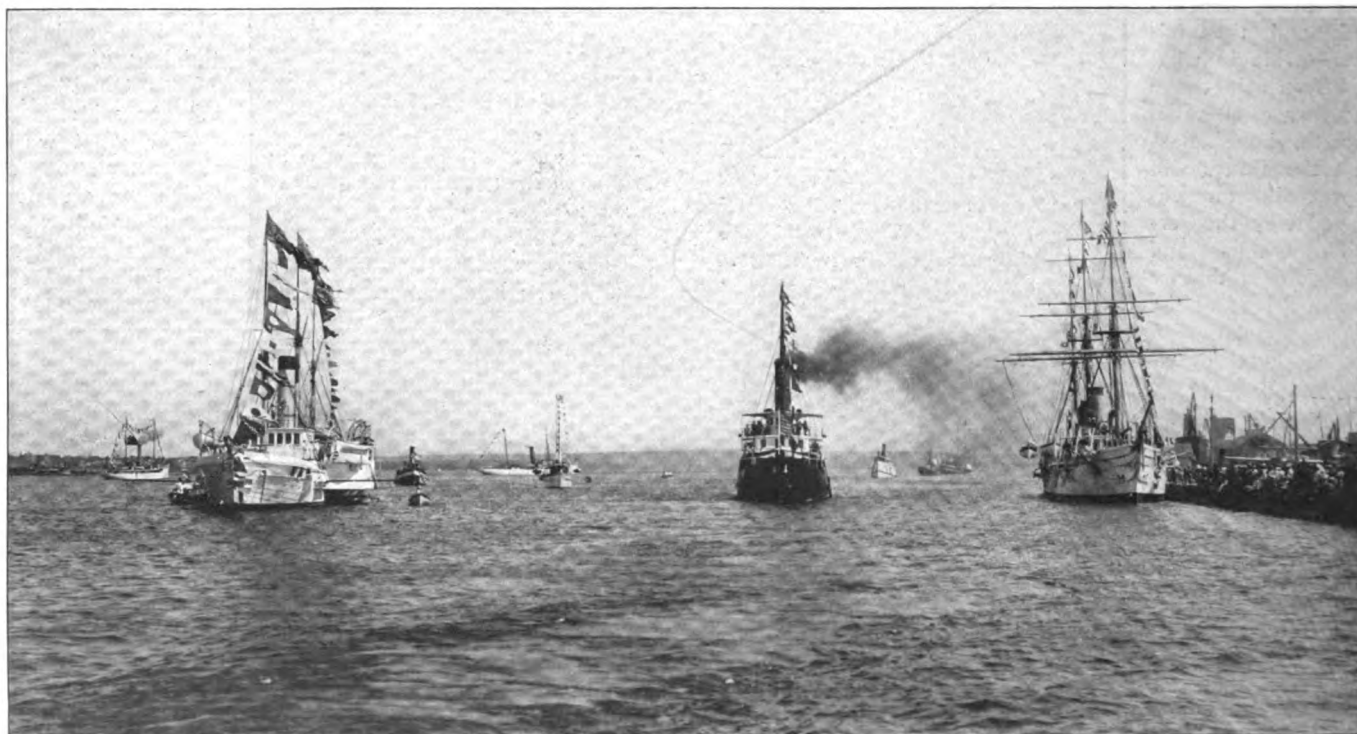
THE PARADE, SAULT STE MARIE CANAL CELEBRATION.

(Copyrighted 1905 by Detroit Publishing Co.)

consider the wonderful development of our state and the commercial relations which have been established between Michigan and the entire world beyond our borders, we too often overlook the agencies which have brought



NAVAL VESSELS IN THE GREAT POE LOCK, BEING LOCKED THROUGH AT ONE TIME.



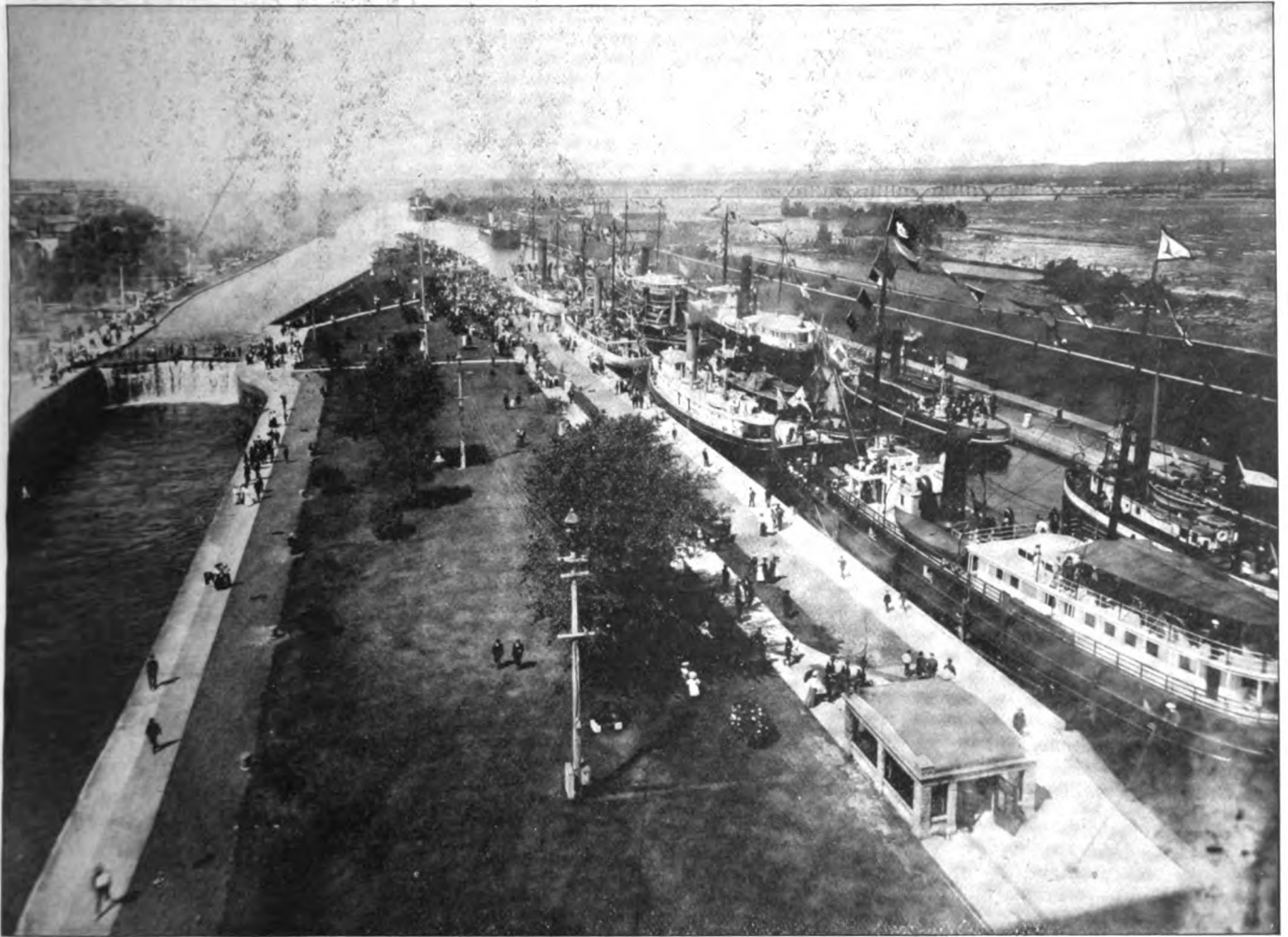
ADMIRAL PETER WHITE'S FLAGSHIP, THE MARIGOLD, PASSING BETWEEN THE WOLVERINE AND YANTIC.

about these results. In the consummation of great enterprises and in the enjoyment of the benefits resulting from them, the difficulties overcome and the courage and energy of the men who champion them are too often forgotten. This is especially true as to the construction of this canal. How seldom do we now think of the discouragements with which its promoters were well nigh overcome, and the splendid faith and untiring perseverance of the men who, under most unfavorable circumstances, could still see hope of success and promise of achievement.

"It is because of this that the setting apart of an occasional day for the purpose of perpetuating in our memories the great events in the state's development may

are located the greatest copper producing mines of the world. Here are to be found well-nigh exhaustless deposits of iron ore. Here, notwithstanding the carrying on of extensive lumbering operations for many years, still exist vast forests of valuable timber. And now this peninsula is astonishing the people below the straits by the rapid advancement of its not inconsiderable agricultural interests.

"In the development of these great and still unmeasured resources the St. Mary's ship canal has borne the leading part. It has been and is the gateway through which have poured the products not only of this peninsula, but of the entire northwest—iron from the Mesabi range, wheat from the fertile plains of the Dakotas and



ANOTHER VIEW OF THE NAVAL PARADE SHOWING THE WEITZEL LOCK EMPTY.

wisely be encouraged, and it is to the credit of the last legislature that it made an appropriation for the proper participation by the state in this celebration. The act of the legislature in making the appropriation was a fitting recognition of the importance of the canal in the development of the great material and industrial interests of Michigan. When, in the settlement of the difficulty between the states of Michigan and Ohio, that part of the state now embraced in what is known as the upper peninsula was practically forced on the state, the country was believed to be of little value, and it was with great reluctance that Michigan accepted the territory in lieu of the valuable tract ceded to Ohio. What a revelation there has been since that time to the people of Michigan and of the country as to the marvelous resources and untold wealth of the then despised upper peninsula! Here

Manitoba—constituting a commerce greater than that which passes through the Suez canal. We of the lower peninsula, priding ourselves on the rapid development of all our resources, congratulate you of the upper peninsula that, largely through the building of this canal, you have been able to make equal progress in the development of your resources. We are interested in all things that pertain to your welfare as we know that you are interested in everything that pertains to ours. Let us not forget that this feeling of mutual interest is making of these two peninsulas one commonwealth, not only in name but in fact—a state, one of the greatest in the sisterhood of states.

"It is surely not expected of me that I speak at length of the history of this great enterprise, or in detail of its effect upon the industries of the state, the nation, and



THE CONNECTING LINKS OF THE HALF CENTURIES.

Mrs. Bill Wiaskia, Mrs. Thomas D. Gilbert, Mr. Francis H. Clergue, Mrs. J. C. Buchanan, Bill Wiaskia and the Hon. Peter White.
With three Indians in the background.

the world, for that privilege is properly left to one who is as much a part of this great north country as the very rocks themselves; one who has been an important factor in its every development, and who because of his good works is as well known to us below the straits as to you above. I can thus refer to no other than Michigan's honored citizen, Peter White.

"Michigan deeply appreciates the interest which the national government, the people of our sister states, and our friends across the border, have taken in these commemorative events, and I consider it especially fitting that the great English speaking nation of Europe should, through the representatives of the Canadian government, participate in this celebration, for it is to these two great English speaking nations, the one of the old world and the one of the new, working hand in hand, that the world must largely look for its standard of civilization through the centuries to come. It becomes my delightful duty to welcome you one and all, to this spot which plays so important a part in the great business activities of the world."

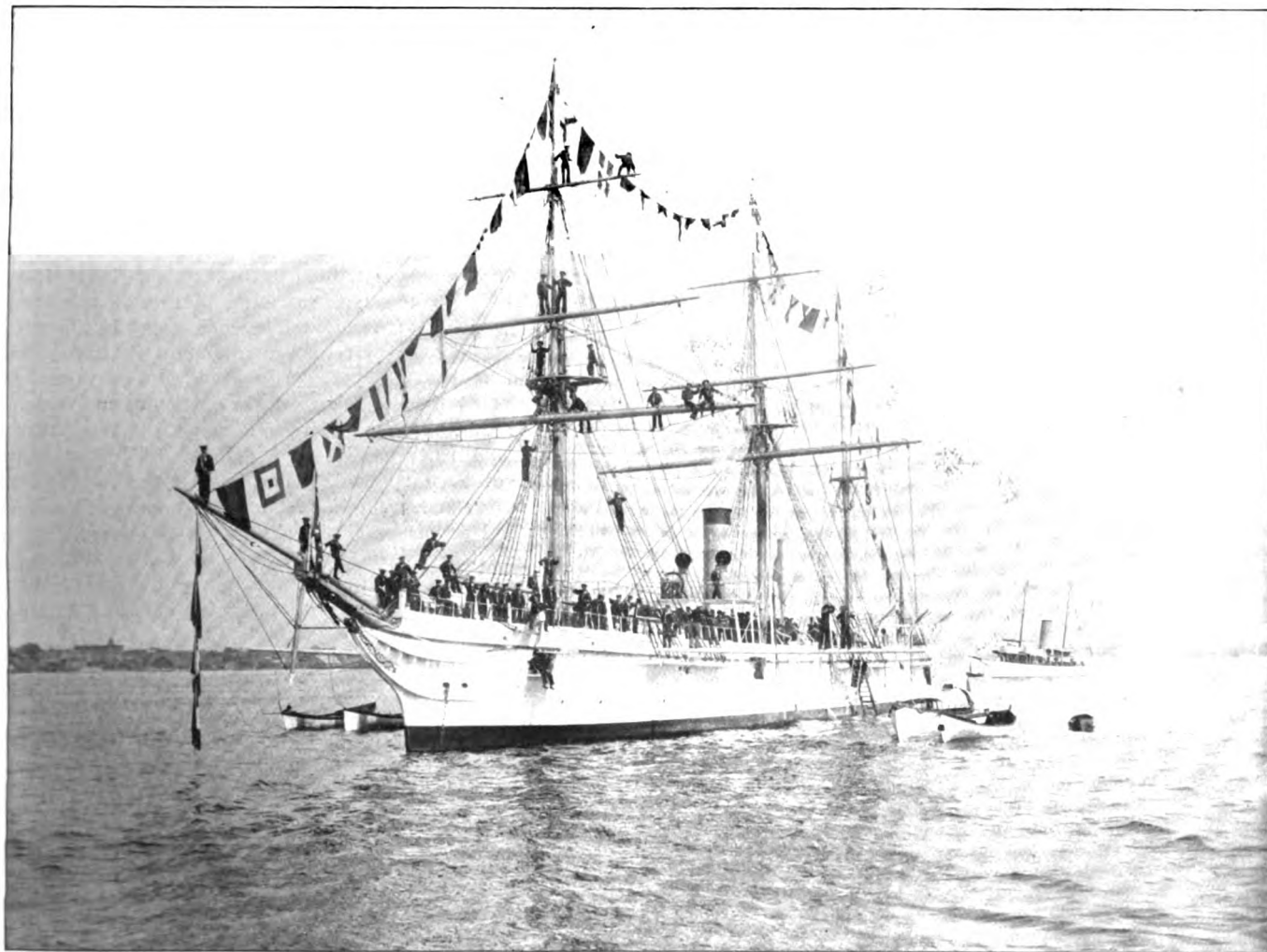
The principal address of the morning was, of course, the historical address upon the development of the Lake Superior region by the Hon. Peter White of Marquette. In this address Mr. White reviewed the entire commercial history of the upper peninsula. It is well known that he went into the peninsula as a boy immediately after the discovery of iron deposits; that he was a member of the first party that ever developed the iron mines and that he has been continuously since an active force in the great iron country. His address, while being practically a review of his own life, was in its nature a review

of iron mining in the peninsula and especially so as regards the early days. Its principal and salient points were noted in the last issue of the *Marine Review*.

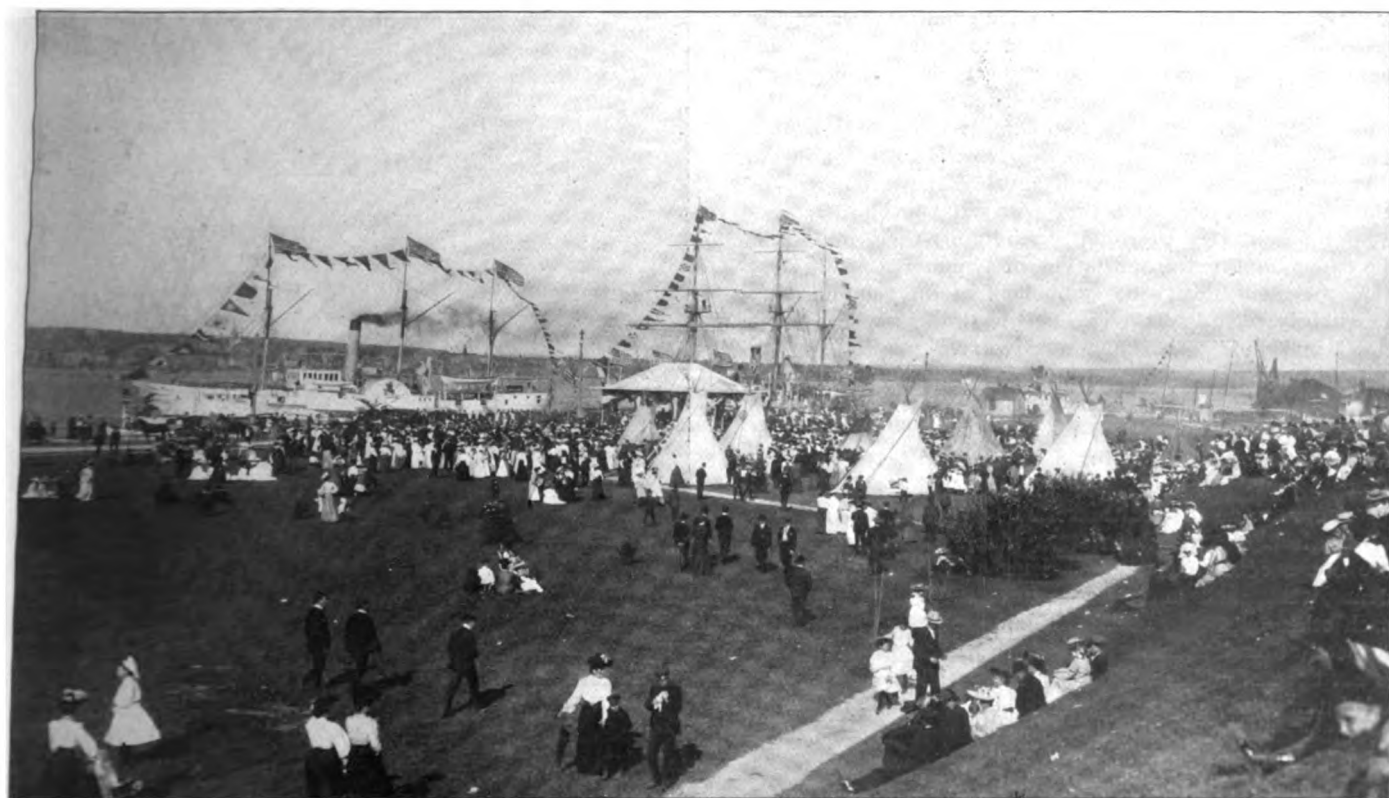
A TOUCHING INCIDENT.

A rather touching incident occurred at the conclusion of the exercises during the forenoon. When the Hon. Peter White stepped down from the platform he was met by Bill Wiaskia, a Chippewa Indian, and two other Indians. At that moment Mrs. Thomas D. Gilbert of Grand Rapids, Mich., daughter of Rev. Abel Bigham, who established a Baptist mission at the Sault in the early days and who was herself born there, joined the party. Though it has been a great many years since Mrs. Gilbert left the Sault she was recognized by the Indians and when she asked them if they still remembered the old Indian hymn that was sung at the mission they nodded and followed both the tune and words as she gave it. Peter White thereupon broke into an Indian song with dance accompaniment to the great delight of the Indians, who immediately began to sing the song and to go through the steps. Mrs. Gilbert was so affected by the singing that it was with difficulty that she restrained her tears.

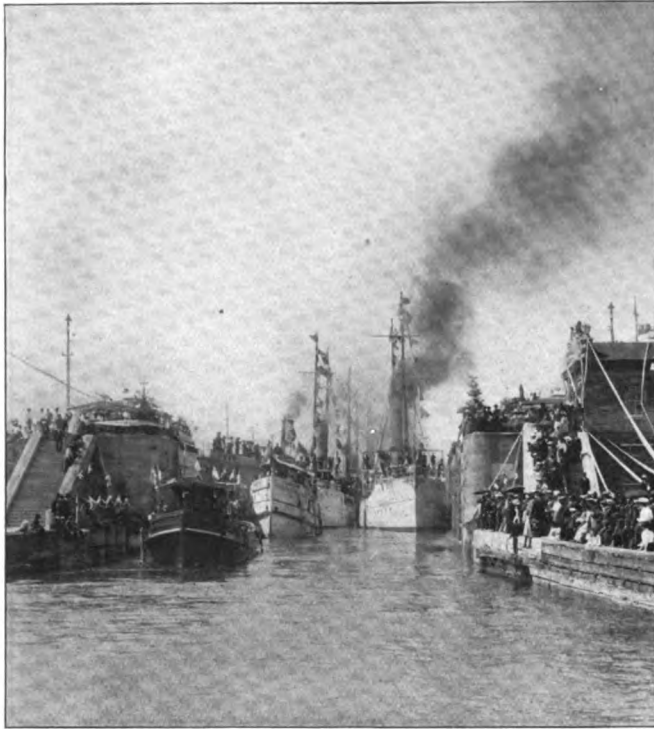
A most significant demonstration occurred at the afternoon meeting. There were seven speeches altogether at the afternoon session, all of them delivered under a hot sun and with a natural fatigue, both to speakers and audience, inseparable from so long continued a session. Yet the audience, tired as it was, called for Clergue and refused to disperse until he had appeared and said a few words to them. Mr. Francis H. Clergue in responding to



THE TRAINING SHIP VANTIC AT THE SAULT CANAL CELEBRATION.



THE INDIAN TEPEES ON THE CANAL PARK AT SAULT STE. MARIE.



NAVAL VESSELS IN CANADIAN LOCK.

the calls said that he was now to be regarded only as appearing in the role of a day laborer, but that he had not lost faith in the future or in Sault Ste. Marie, and predicted that before the centennial of the canal could be celebrated Sault Ste. Marie would be the metropolis of the west.

The principal speaker at the afternoon session was Vice President Fairbanks, who was listened to with great attention and who packed a great deal of excellent matter into very small space. Vice President Fairbanks said:

"Mr. Chairman, Ladies and Gentlemen: We cordially welcome our friends from Canada to share in this celebration. The event we commemorate is of mutual interest to the people of the two countries. Here side by side, are three great locks, two constructed by the United States and the other by the Dominion of Canada. Through them passes interchangeably the commerce of the two countries. Here they will stand in close fellowship for centuries to come, discharging their important functions in the transportation of commerce. We trust that they will always be symbolical of the relations and neighborly regard of the two people through whose veins flows the blood of a common ancestry.

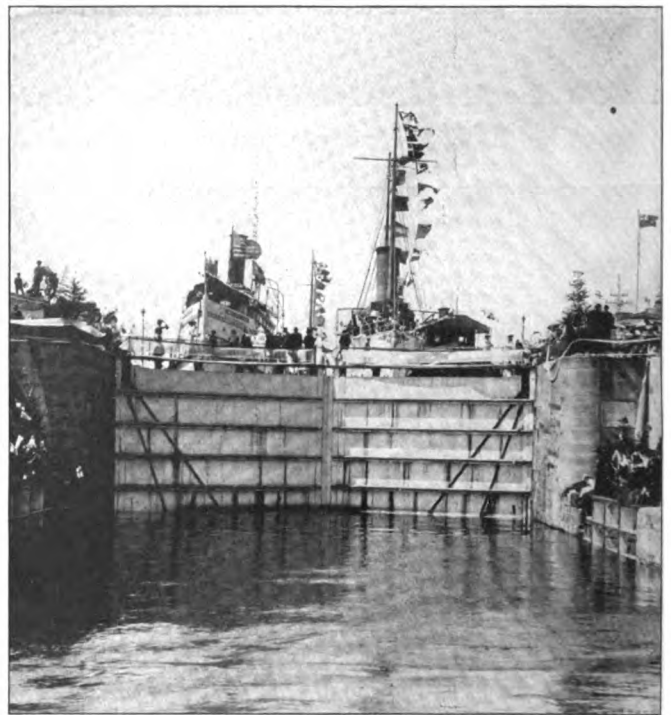
"We owe allegiance to different institutions. Above us are different flags, emblems of the mightiest powers upon this earth. We have no sense of rivalry except in these ways which make for a higher and better civilization.

"There are no fortifications along our common frontier; no battleships upon the waters which divide us. These are not needed now, and we trust that in God's Providence, they shall never be required. We are bound to each other by strong social ties and sentiments of mutual respect. Competition in trade is a vitalizing factor. It is not born of unfriendliness. It has its inspiration in that self-interest which has been the life of trade from the beginning until now. One of our wisest Americans, William McKinley, whose good name is the precious heritage of the human race, said at the Pan-American exposition at Buffalo: 'Though commercial competitors we are,

commercial enemies we must not be.' The national policies of the United States and Canada may not be in accord. If they be not, it will be due to no unfriendliness of purpose, but to that sense of duty which each primarily owes to its own.

"We look upon our commercial development since this canal was dedicated to commerce, with the utmost satisfaction. All sections of the country, have gone forward, expanding in commercial strength, but nowhere is there to be found more remarkable growth than we witness in the territory which is tributary to the Sault Ste. Marie canal. The tonnage passing through this canal has risen from an average of 12,000 tons per annum in the first decade, to 25,000,000 of tons per annum in the ten years ending in 1904. Last year more than sixteen thousand vessels passed through these docks, carrying more than thirty-one million tons of freight, valued at over three hundred and forty millions of dollars. The maximum has not yet been reached. Chicago, Milwaukee, Duluth, Toledo, Cleveland, Buffalo and other cities which sit in majesty and power upon the shores of the Great Lakes, are rapidly increasing in population and in commercial importance. The great agricultural regions are sending their vast surplus to feed millions in the east and beyond the Atlantic.

"The commerce of the United States has increased beyond the dreams of the most optimistic of a half century ago. Our foreign commerce has, with rapidity, attained a vast volume. It is insignificant, however, in amount and value when compared with our internal commerce. Railways are taxed to their utmost capacity, and our ships upon inland water routes are loaded to the limit of their



CANADIAN LOCK WITH GATES CLOSED.

carrying power, bearing the products of a progressive and great people. Old methods of interchange are found inadequate to meet the current needs. They are constantly improved and enlarged. New instruments of intercommunication are created. The capacity of all these is quickly taxed. New transportation facilities create new traffic. The wants of the people quickly expand to meet them. The canal is identified with the period of our most

rapid industrial development. The ever-increasing procession of ships through it, tells the story of our expanding production, growing trade and increasing industrial importance.

"The scepter of commercial power is speedily passing into American control. If we are but true to the vast opportunities which lie at our hands, the United States



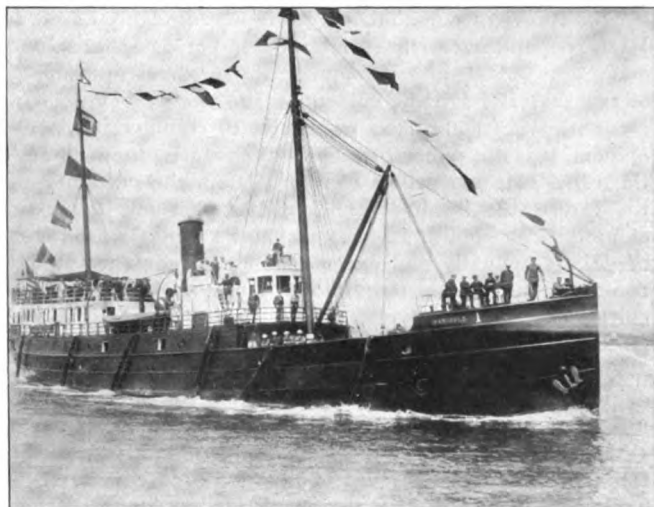
MISS BETTY POE.

will become the acknowledged leader in the commerce of the world. The conquest will be achieved by the men of trade and not by the men of war. It will come by a sort of irresistible law of commercial gravity. It will come because of our increased productive capacity; because of our superior ability to supply the needs of others; because of the illimitable resources of our farms, mines, and factories; because of multiplied methods and enlarged facilities of cheap transportation from the centers of production down to the seaboard. We take pride in our commerce because it tends to lift the country to a higher and better level. It tends to equalize conditions. It enlarges the opportunities of labor and capital and gives our people more homes and fills them with more of the comforts of life. It brings communities and trade centers together in common interest. A higher civilization follows in its pathway.

"While we are a commercial people, we are not subservient to commercialism. We seek to expand commerce, as a means, not as an end. We seek its conquests that we may minister to those high aspirations which are the birthright of the Anglo-Saxon race. It is a well-recognized maxim of trade that commerce will follow the lines of least resistance. The great lakes afford cheap transportation for the vast commerce tributary thereto. The control by the government of the Sault Ste. Marie canal, its enlargement and improvement, has resulted in stimulating traffic. It insures just and reasonable transportation charges over a vast area, and will become, as the density of our population increases, and as trade expands, of incalculable importance in the future.

The United States has been liberal in advancing the interests of commerce. She has been generous in the improvement of rivers and harbors to the end that they should be adequate to meet our advancing national needs. She has appropriated liberally for canals. The Sault Ste. Marie canal is not the only evidence of this fact. Her most important work in promoting the expansion of our commerce is upon the Isthmus of Panama. The enterprise there is of vast magnitude—one which has defeated all efforts hitherto. It is undertaken upon broad lines, for it will welcome impartially the commerce of the world. What others have been many years endeavoring to accomplish, we shall not do in a day. Much money, time and patience will be required to complete the work. But it will be built, for the United States has put its powerful hand to the task.

"It is a gratifying fact that the enormous commerce of the United States upon the great lakes is carried in American ships. The vessels which pass through this canal carrying our products, bear the flag of the United States. They were built in our shipyards and are manned by American seamen. When we come to commerce upon the high seas, we largely give over its carriage to ships built abroad and sailed by alien owners. A large part of the commodities which pass through this canal to the Atlantic seaboard for transshipment to foreign countries, is transferred from these American owned and American operated ships to vessels of foreign ownership and foreign register. This would seem to be incompatible with



ADMIRAL PETER WHITE'S FLAGSHIP MARIGOLD.

a wise national policy. The United States makes for peace. Through the timely intercession of President Roosevelt, one of the bloodiest wars in history is about to close. The commissioners of the belligerent powers will assemble in a few days under the protection of the American flag, to deliberate with each other. We trust that their great mission may be successful; that they may be able to restore peace and disband the great armies confronting each other in the Orient. We are assembled under happy auspices. All our people are engaged to the utmost in promoting the manifold arts of peace. They are busy in trade and commerce, science and education, agriculture and manufacture. They are active in charity and philanthropy, seeking to make the day in which we live the most luminous in the history of mankind."

Addresses were then made by Hon. Rodolphe Lemieux, solicitor general of Canada, and the Hon. Raoul Dandéran, secretary of the Dominion senate. Both empha-

sized the fact that while politically separated, the destiny of the United States and Canada was a common one, that they were both pledged for the promotion of peace, commerce and liberty. These addresses will be published in full later by the *Review*.

Hon. Theodore E. Burton, chairman of the committee on rivers and harbors of the house of representatives, followed with an address upon "The Improvement of Lake Channels," which will be published in the next issue of the *Review*.

"Navigators of the Great Lakes" was the title of an address by Wm. Livingstone, president of the Lake Carriers' Association. In it he briefly reviewed the growth of lake commerce since the completion of the Sault Ste. Marie canal, avoiding statistics as a rule but simply employing the few that were necessary to exhibit the proportion of growth. His address was most excellent and while brief was a perfect compress of information on lake matters. It will be published in full in the next issue of the *Review*.

Senator J. C. Burrows delivered the concluding address, confining his attention solely to the upbuilding of the American merchant marine. He spoke without notes, making his phrases homely, and held the attention of the audience to the last minute. He said:

"One would need to be possessed of the spirit of prophecy in a remarkable degree to speak with any accuracy as to the future of American commerce. If domestic commerce alone is intended to be embraced in this sentiment, we could speak of its future with reasonable assurance, for the future of our domestic trade is reasonably assured. With free and unrestricted intercourse between states, our marvelous industrial development, the inexhaustible supply of raw material and the enterprise and energy of our people, with wholesome laws promotive of commercial development, it is not difficult to divine the future of our domestic trade. Its marvelous past proclaims the certainty of the future. It is an astounding fact that our domestic commerce on land and sea aggregates twenty-two billions of dollars annually and exceeds in magnitude the foreign commerce of all the nations of the earth. It is not difficult, therefore, to divine, that with the increasing and steady development of our resources and the improvement of our rivers and harbors under the administration of the distinguished gentleman from Ohio, Mr. Burton, the magnitude of our domestic commerce is only limited by the extent of our resources and the energy of our people. So far, therefore, as the future of our domestic commerce is concerned, it is not open to speculation or doubt.

"The future of our foreign commerce is more problematical and its development is a matter of keenest solicitude. This is pre-eminently a business age and the nations of the earth, as never before, are struggling for the mastery of foreign commerce. With the absorbent capacity of our domestic market taking 92 percent of our manufactures, yet we produce more than we can consume, and a foreign market must be found somewhere for the surplus products of our shops. With six hundred thousand manufacturing establishments employing seven million of workmen and with an aggregate annual output of fifteen billions of dollars, we have become the greatest manufacturing nation on the face of the globe, and, after supplying the needs of our people, we have a surplus of one billion two hundred million of manufactured goods which must be disposed of somewhere in the world's market. I expect the future will bring to us a greater measure of the world's trade, which takes today four billion dollars' worth of manufactured goods, and the United States furnishes only five hundred million, or 12½ percent. I look to see our share in

the world's markets greatly augmented. I expect the future will give us a larger market in Asia, South America and Africa. I expect the future will give us a larger trade with the people of South America, lying at our very door, who last year took three hundred and eighty millions of dollars' worth of foreign products, only thirty-five millions of which came from the United States. While she purchased from England one hundred and twenty millions; of Germany, fifty-four millions; France, thirty-five millions; Spain, eight millions, and even of distant Italy, thirty-four millions; and the United States furnishing but 13 percent of this foreign purchase, Asia and Oceania took seven hundred millions of dollars' worth of manufactured goods, of which the United States furnished but sixty-five million, while Africa with her three hundred millions of imported manufactures took from the United States only thirteen millions. In the matter of cotton goods it is astounding to know that South America as a whole took sixty-three millions of dollars' worth of cotton fabrics and only three and one-half millions, or 10 percent, from the United States, although the United States is the greatest producer of cotton of any nation on the globe.

"While our trade with these countries is so restricted and we furnish such a small part of their imported manufactures, yet the prospects of enlarged commerce with these nations was never more flattering than today. More than that, our outlying possessions furnish a fresh field for commercial exploit. Six years ago our exports to Porto Rico were only two millions of dollars, while last year they were twelve millions. Our exports to Hawaii have grown from four millions in 1897 to eleven millions in 1903 and our exports to the Philippines from ninety-four thousand dollars in 1897 to four millions in 1903.

"There is another hopeful sign for the future of this country in the matter of our foreign trade and that is the aroused public sentiment and interest in favor of building up our merchant marine. It is a reproach to this nation that while our entire foreign commerce in 1903 aggregated in value two billion four hundred millions of dollars, only two hundred and fourteen millions, or 9 percent, was carried in American ships. We paid for freighting American commerce, exports and imports, last year, one hundred and forty millions of dollars, and of this sum only twelve millions was paid to American ship owners. The thirty millions of dollars paid for passenger traffic across the seas went chiefly into the pockets of foreigners. It is a humiliating fact that the flag of our trade is seldom seen in foreign ports.

"The Hon. John Barrett, an American minister, testified before the shipping commission recently, that in the last ten years he made three trips around the world and had therefore ample opportunity to judge of the condition of our foreign merchant marine. During this period he was also minister representing the United States at the Argentine Republic and in Siam. The foreign trade of the Argentine Republic last year was three hundred and sixty millions of dollars, of which the United States received only twenty-four millions, and he states that there are seven great ship lines to European countries besides large freighters, carrying this immense commerce, while not a single American line enters the port of Buenos Ayres. In his last journey around the world, he says, passing from San Francisco to Japan, China, India, the Mediterranean and Europe, he did not see in the course of his journey a single merchantman flying the American flag. While minister at Siam for a period of four years, he declares that not one American merchantman entered the port of Bangkok. Today a half dozen great lines of fast steamers are plying between Europe and eastern Asia and only one line between our western coast and the Orient.

The trade of Europe with Asia today is six or seven times greater than it is with the United States. This is ascribable in my judgment to the want of shipping communications with these countries.

"Recently we had a protracted controversy whether the flag follows the constitution or the constitution follows the flag, but there is one thing about which there is no contention and that is trade always follows the flag. I have great confidence, therefore, in the future of American commerce. As I said before, our domestic commerce is secure. Our foreign trade will certainly be augmented.

"At the last session of congress a commission of ten persons was appointed charged with the duty of making inquiry into the instrumentality to be employed in building up our merchant marine. The creation of the Department of Commerce, charged especially with the promotion of our trade and the appropriation of \$30,000 to employ agents to visit the South American countries and ascertain their interests, are all hopeful signs of an enlarged foreign trade.

"Public sentiment is thoroughly aroused upon this subject. I do not propose to discuss the methods by which the merchant marine may be rehabilitated, but that it will be accomplished I have not the slightest doubt. The importance of this method is already recognized. McKinley said upon this subject: 'Foreign ships should carry the least and not the greatest part of the American trade. The remarkable growth of our steel industry; the progress of shipbuilding for the domestic trade and our steadily maintained expenditures for the navy have created an opportunity to place the United States in the first rank of commercial maritime powers.' President Roosevelt recently declared: 'Shipping lines for our commerce to the principal countries with which we have dealings would be a political as well as commercial benefit. From every standpoint it is unwise for the United States to rely upon the ships of competing nations for the distribution of our goods. It should be advantageous to carry American goods in American built ships.'

"The trade of the future lies across the Pacific. The prows of all the merchantmen of all nations are turned toward the Orient. The waters of the Pacific cover one-tenth of the surface of the globe and one-half the population of the earth find their natural outlet over its majestic expanse.

"Our occupancy of the Philippines at the very threshold of the open door to Asiatic trade places the United States in the advance. With the restoration of our merchant marine, the continued improvement of our rivers and harbors, the completion of the Isthmian canal, the time is not far distant when the United States will resume its lawful place on the sea and unfurl our flag of commerce in every port of trade on the face of the globe."

Bill Wiaskia, the Chippewa Indian, occupied a seat on the platform and was invited to speak just before the celebration came to its official close. It was a connecting link with the past that he should have renewed the protest of Shagud, made fifty years ago. The original canal lock went through the old Indian burying ground, which had been forever reserved by treaty to the Indian. Shagud eloquently pleaded for the observance of the compact, but it was useless. Wiaskia related how, fifty years ago, he had journeyed to Detroit and how Gen. Cass, who drew the original treaty, had told him there that aside from the actual strip occupied by the canal the remainder with its adjoining islands was part and parcel of the Indian reservation, to remain in their possession "so long as the water flowed past it." Wiaskia maintained that this agreement too had been violated without adequate satisfaction. Wiaskia is a big man. He spoke easily, with large and graceful

gestures and with great dignity. He left the speaker's stand with a giant's stride and with the profound respect of all who heard him. All things considered, it was fitting that the exercises should have been closed in this manner. It brought the two beginnings of the two half centuries together. Who knows but what the Indian, who confessedly has not had his just deserts, may be better treated at the close of this half century than he was at the close of the last? The exercises were concluded by singing "America."

A SCIENTIFIC SAILING CRAFT

A new sailing craft christened the Galilee has just been built in San Francisco, Cal., and fully equipped for three years' continuous scientific cruising. This vessel is of about 150 tons burden, and is a very staunch and comfortable craft in every respect for the purposes intended. The Galilee is to be used in making a general magnetic survey of the North Pacific ocean, that will be of very great importance and advantage to all western navigators. This survey will be conducted by the Department of the International Research in Terrestrial Magnetism of the Carnegie Institute of Washington, D. C. This vessel has recently sailed from San Francisco, on her first cruise, and will be absent about three months. The director of the work is Dr. L. A. Bauer, who is likewise in charge of the magnetic work of the United States Coast and Geodetic Survey. The Galilee will carry a crew of nine men and a sailing master. The scientific leader and commander of the vessel will be J. F. Pratt, of the United States Coast and Geodetic Survey, who has had thirty years' experience in astronomical, geodetic, hydrographic, and magnetic work. The members of the scientific corps are Dr. J. Hobart Egbert, magnetic observer, surgeon and naturalist; J. P. Ault, magnetic observer, and V. W. Whitney, magnetic observer and watch officer.

The object of the expedition is to secure precise data of the distribution of the magnetic forces of the Pacific ocean. Except from occasional expeditions and such as were acquired in wooden vessels a long time ago, the present magnetic charts used by the navigator over this region depend largely upon the observations taken on islands and along the coasts. Such land observations, however, are rarely representative of the true values, because of prevalent local disturbances. It is, therefore, impossible to make any statement as to the precise correctness of the present charts.

An initial allotment of \$20,000 has been made to cover the expenses for the current year. It is estimated that the work can be accomplished in three years. The first cruise will be from San Francisco to San Diego, Honolulu, and back to San Francisco.

It is then proposed to make a circuit from the west coast of America to the Galapagos islands, thence across the Pacific to the Philippines and Japan, returning by way of the Aleutian islands, closing the circuit at San Francisco, and thence continuing through a series of areas bounded by parallels of latitude and meridians of longitude, each five degrees apart, lying next on the mid-ocean part of the circuit last made, and proceeding gradually and by successive circuits into the central region of the North Pacific.

The total length of the course marked out for the Galilee is about 70,000 knots. It is estimated that all this great work can be accomplished within three years. The cost per month of the field work inclusive of all work expenses and services will approximate \$1,500. Counting eight months of service per annum, the total annual outlay is estimated at about \$12,000.

LAUNCH OF TWO FINE STEAMERS

Two more big freighters, the Peter White and Powell Stackhouse, were successfully launched at Detroit on Saturday morning last, the first named at the Ecorse yard of the Great Lakes Engineering Works, and the second at the Wyandotte yard of the American Ship Building Co. Both launches were successful in every particular. The Peter White is building for the Presque Isle Transportation Co. of Cleveland, of which Mr. W. G. Mather is president. The Stackhouse is building for the Mahoning Steamship Co., of Cleveland, of which Mr. Dan Hanna is manager.

When the launching party of the Peter White approached the Ecorse ship yard, they observed a huge facsimile of Peter White's signature in chalk upon the starboard bow of the steamer. Peter White's signature is of the most extraordinary character and anyone who has once seen it would distinguish it anywhere on earth. It attracted considerable attention and there was a suspicion abroad that Mr. White had gone to the shipyard some time in the night and written his name upon the bow of the vessel. Had they seen a workman climbing over the bow as the Pleasure hove in sight they would not have thought so.

The launching party of the Peter White was quite small, there being not more than a dozen persons present. The steamer was christened by Miss Julia Russel, daughter of Mr. George H. Russel, of Detroit. Every feature of the launch was a great success, the great steamer taking the water upon an even keel and Miss Russel smashing the bottle squarely across the bow. In fact, she smashed it so well that she drenched not only the ship but herself, Peter White, Mr. Mather and Mr. Pessano as well. Peter White stoutly declined to permit the champagne to be wiped from off his clothing. The launching party consisted of Miss Julia Russel, Miss Katherine Rumney, Misses Helen, Ethel and Mildred Plumb, Mrs. Theodore McGraw, Miss Elsie Gregory, Miss Frances Sibley, Mr. George H. Russel, Mr. W. G.

Mather, Mr. Harry Penton, Mr. John R. Russel, Mr. A. C. Pessano, Mr. Wm. Livingstone, all of Detroit; Prof. O. H. Tittman, Washington, D. C., and the Hon. Peter White.



MISS JULIA RUSSEL AND PETER WHITE ON THE LAUNCHING STAND.

Mather, there would be little time left for the younger element, which he represented, to exploit itself. He spoke for a few moments thus facetiously and then permitted Mr. Pessano to preside. Brief speeches were made by Mr. W. G. Mather, Mr. Wm. Livingstone, Peter White and Mr. Quinby.

The Powell Stackhouse was christened by Miss Katherine Stackhouse, the daughter of Powell Stackhouse, of Philadelphia. The launching party consisted of Mr. and Mrs. Powell Stackhouse, Miss Katherine Stackhouse, Miss Lucy Stackhouse of Philadelphia, Daniel Stackhouse, Johnstown, Pa.; Mr. and Mrs. Powell Stackhouse Jr., El Paso, Texas; Mr. Russel C. Wetmore and Mr. R. L. Ireland, Cleveland; M. E. Farr and C. B. Calder of Detroit. The launching party took luncheon at the Detroit Club.

Both the Stackhouse and the Peter White are of the same dimensions, being 524 ft. over

all, 504 ft. keel, 54 ft. beam and 30 ft. deep, and are equipped with triple expansion engines 23, 38, 63-in. cylinder diameters by 42-in. stroke, supplied with steam from two Scotch boilers 14 ft. 9 in. by 12 ft. They are both designed to carry 9,000 tons of ore, but owing to the high water prevailing this year, will probably carry more. It will not be surprising if they both carried 9,500 tons.



THE STEAMER PETER WHITE ON THE STOCKS.

CHICAGO GRAIN REPORT

Chicago, Aug. 8.—Freights are reflecting fairly strong tone and vessels are in good demand at basis $1\frac{1}{4}$ cents Buffalo corn and $3\frac{3}{4}$ to $3\frac{7}{8}$ cents through routing to Montreal. The total shipping is in excess of the previous week some half million bushels and distributed about as follows: via all rail lines of wheat, 143,700 bu.; corn, 422,381 bu., and oats, 876,614 bu.; via lake to Buffalo and other American points, of wheat, 80,000 bu., and corn, 1,401,000 bu.; oats, 80,000 bu.; and to Canada points via lake, of corn, 322,400 bu. and oats, 376,000 bu.

Going cash inquiry from eastern and export markets is stimulating a fair marketing of old grain from the country points—the past week noting of Chicago receipts some 2,000,000 bu. wheat, 1,300,000 bu. corn, and 2,620,000 bu. oats. Reports of the growing crop hold of most encouraging order and the early calculations of extensive harvesting making for entire fulfillment. The yield of some 850,000,000 bu. oats, heretofore suggested by report of the United States department of agriculture, is practically at maturity, while the corn crop is promising of fully 2,500,000,000 bu. These new oats will move for lake distributing points in latter August—the spring wheat following about middle September.

In general the grain situation gives promise of fairly active vessel demand throughout the balance of season.

Lake and Rail Shipments:

	This week.	Last week.	Same week last year.
Wheat	223,700	270,074	484,074
Corn	2,145,786	1,764,382	1,661,140
Oats	1,333,032	1,200,156	523,509
Rye	3,000	7,946	14,640
Barley	10,661	46,203	22,593
	3,716,179	3,288,761	2,705,956

Lake and Rail Shipments:

	Since Jan. 1, 1905.	Same time year ago.
Wheat	7,541,621	8,102,493
Corn	54,454,713	38,571,964
Oats	30,870,490	27,258,844
Rye	614,716	817,687
Barley	2,437,490	2,738,827
	95,919,030	77,489,815

Stocks in Private and Public Elevators:

	This week.	Last week.	Same week last year.
Wheat	3,465,000	2,198,000	2,330,000
Corn	5,229,000	5,923,000	4,868,000
Oats	3,605,000	2,599,000	1,001,000
Rye	120,000	91,000	563,000
Barley	20,714	15,714	144,000
	12,439,714	10,826,714	8,906,000

AROUND THE GREAT LAKES

Capt. Wm. P. Benham is ashore looking after the fitting out of the new steamer Wm. A. Paine.

All the passenger lines out of Detroit report the business of the present season to be the best in several years.

A. D. Thompson & Co., of Duluth, one of the largest grain firms of the northwest, has leased the Great Northern elevators at Superior.

The McMorran Wrecking Co., Port Huron, Mich., has taken the contract to raise the steamer Shamrock which was sunk in Thunder Bay.

The steamer Penobscot is to be lengthened 72 feet at the close of the present season. She is now 351 feet long with a gross tonnage of 3,502 tons.

Information from Chicago is to the effect that the lake

passenger trade out of that port, mainly excursion business, has been the heaviest in years.

Capt. James Reid, of Sarnia, has purchased the iron ore cargo in the wreck of the steamer Yakima lying at the head of Stag Island in the St. Clair river.

The steamer Augustus B. Wolvin loaded 11,140 tons of coal at Cleveland last week, which is the largest cargo of coal that was ever carried up the lakes.

The steamer James H. Reed, of the Provident Steamship Co.'s fleet, put into the Detroit Ship Building Co.'s dock last week with a cracked cylinder head.

The Canadian steamer S. S. Wexford blew out the cylinder head of a high-pressure engine when about four miles west of Thunder Bay Island last week.

The tug Home Rule will receive a new boiler and other changes at the shear dock of the Detroit Shipbuilding Co. The tug will be out of commission for several days.

Mr. J. B. Miller, of Conneaut, one of the best known and oldest engineers on the lakes, has retired. He was chief engineer of the steamer Mariska of the Pittsburg Steamship Co.'s fleet.

The steamer J. J. Albright, of the Mitchell fleet, on her last trip carried 7,149 gross tons of ore. She is 416 ft. long and 50 ft. beam and this cargo is therefore quite a record for this type of boat.

With the season of navigation about half through, insurance men have sustained a loss on hulls but a considerable profit on cargoes, the total losses for the first half of 1905 averaging about \$800,000.

The steamer E. H. Gary has again broken the cargo record of the great lakes by loading 12,423 gross tons of iron ore at Escanaba for delivery at South Chicago. Her former record on this trip was 11,882 tons.

Capt. J. A. Wiesback, of Buffalo, has surveyed the Aurania which ran aground at the Sault recently, and reports that twenty plates must be removed. This will keep the steamer at Lorain for about ten days.

Mr. H. F. Brandebury, assistant superintendent of construction of life saving stations, has received instructions from Washington to proceed with a testing of the possible new site for the station to be established at Lorain.

Alexander Adams is now the chief engineer of the steamer Huron, having been promoted from second engineer of the steamer Minneapolis. Both vessels are owned by the Minneapolis, St. Paul & Buffalo Steamship Co.

The new steamer Lyman C. Smith, which was built at the Wyandotte yard of the American Ship Building Co., is carrying more than her owners and builders figured. The Smith has just cleared from Duluth with 10,640 tons of ore.

The new steamer George W. Perkins carried 10,742 tons of iron ore from Two Harbors last week, being the largest cargo ever carried from the head of the lakes to a Lake Erie port. The larger cargoes have gone to South Chicago.

One of the largest tugs in the Dominion was launched last week at the yard of the Canadian Ship Building Co., Toronto, for the Great Lakes Dredging Co., of Port Arthur. She is 110 ft. long and is fitted with powerful engines, being intended for ice crushing purposes about the harbor of Port Arthur.

Two new freighters, the steamer Wm. A. Paine and the Wm. E. Corey, are now in commission. The Paine, which was built at the Cleveland yard of the American Ship Building Co. for Capt. Charles L. Hutchinson, of Cleveland, is under command of Capt. Wm. P. Benham. The Corey, which was built at the South Chicago yard of the American Ship Building Co. for the Pittsburg Steamship Co., is under command of Capt. Fred A. Bailey.

WILL WORK FOR MERCHANT MARINE LEAGUE

Mr. Alexander R. Smith, for the last four years superintendent of the New York Maritime Exchange, has tendered his resignation to the directorate, to take effect on Sept. 1, in order to devote himself to the upbuilding of the Merchant Marine League of the United States, a non-partisan, national patriotic organization with headquarters at Cleveland, Ohio. The league has memberships in all parts of the United States. Its object is to stimulate public interests in American shipping in the foreign trade in order that it may be placed in a position to profitably compete with the foreign shipping now carrying our foreign commerce. For nearly twenty years Mr. Smith has been prominently identified with the agitation for such governmental action as shall place the shipping industry upon a parity with the other great interests of the United States, and he hopes to help make the Merchant Marine League a great factor in securing congressional legislation during the next year.

The Merchant Marine League of the United States was organized last fall, in Cleveland, Ohio, by a number of influential citizens of that city, who patriotically desire to see the American ship regain its former ascendancy upon the ocean, and who then felt and who still feel that the neglect of this once great American industry by congress should be remedied forthwith. Mr. Harvey D. Goulder, a prominent Cleveland attorney, is president; Mr. J. J. Sullivan, president of the Central National Bank of that city, is treasurer, and Mr. John A. Penton, a publisher, also of Cleveland, is secretary of the league. The league already has a membership of several hundred and new names are being added to its roster every day. Its influence is being widely felt in the country, and it is recognized by the press, by men interested in public affairs and by members of congress, as a distinctly patriotic league, having the welfare of the whole country, rather than that of the shipowners and shipbuilders, in view. The Merchant Marine League feels that it is a reflection upon our national intelligence, wisdom and patriotism, that our shipping in the foreign trade is to-day but one third as large as it was forty-four years ago, although our foreign commerce is five times more valuable now than it was then, and they feel that it is nothing short of a national disgrace that our foreign-going shipping is to-day less than it was in the year 1810—ninety-five years ago.

While successive presidents of the United States have for many years annually urged congress to enact legislation helpful to the growth of American shipping, and while bills to that end have repeatedly been introduced in congress, sometimes passing one and at other times passing the other branch of that body, no general measure has yet been passed alike helpful to all classes of our national marine. President Roosevelt has been most strenuous and persistent in his advocacy of an American merchant marine equal to the requirements of our foreign commerce, both in his annual messages to Congress, and his public utterances in different parts of the country. Upon his recommendation last congress at its first session appointed a commission consisting of five senators and five representatives to investigate the condition of our shipping and report to congress a bill that would carry into effect their recommendations. They presented their bill at the last session, but too late to secure the time necessary for such discussion of the measure as would undoubtedly be required.

The Merchant Marine Commission's bill provided: (1) The establishment of a dozen different steamship lines, to run from Atlantic, Gulf and Pacific ports of the United

States, to South and Central America, the West Indies, Africa and the Orient, such lines to receive from the national government payments for the carriage of the mails sufficient in amount to induce men with capital to invest in the needed ships, although the aggregate of such payments would not exceed the sum collected by the government from its sea postage. (2) The creation of a national naval reserve from among the men employed on American ships, similar to that in existence in other countries. (3) Such a change in our tonnage dues as would substantially increase the national revenue. (4) The payment of five dollars per ton per annum to cargo ships not carrying the mails, and running to foreign countries, the aggregate of which latter payments would little, if any, exceed the amount of the revenue received from tonnage dues during the first few years of the operation of the act. While American ships would be compelled to pay full tonnage dues paid by foreign ships, the bill provided for a rebate of 80 percent of such dues to such American ships as carried a fixed and increasing proportion of naval reserve men, a method somewhat similar in its scope to one by which the British government secures native-born seamen for its merchant ships.

Although the Merchant Marine Commission was composed of six Republicans and four Democrats, but one feature of the commission's bill was opposed by three of the Democratic members—the proviso regarding cargo ships, these members recommending in lieu thereof a return to the old policy of discriminating duties, by which imports in American vessels would pay less duty than required from imports in foreign vessels, the adoption of which by congress would involve the abrogation of a score or more of our treaties of commerce and navigation with as many different foreign governments.

The commission's bill was referred to the proper committees in each branch of congress, and was promptly and favorably reported from the committees but three of the six Democratic members of the senate committee signing the minority report, and not all of the Democratic members of the house committee signing its minority report, each minority report recommending, in lieu of the subsidy to cargo carrying ships, a return to the discriminating duty policy.

It is expected that the Merchant Marine Commission's bill will promptly be introduced in each branch of congress as soon as it meets, and, in view of the action of the committees of the last congress on the bill, a favorable report will doubtless be promptly secured from each committee, upon which early consideration of the bill will be urged in both houses.

While the Merchant Marine League of the United States, as a body, has not formally approved of the Merchant Marine Commission's bill, it is known that its leading officers individually favor it, believing that its passage can be more easily secured than could any of the bills to the same end that of recent years have been introduced in congress. The significance of the lack of partisan division on the bill, as shown in the last congress, leads the officers of The Merchant Marine League to hope that the coming congress will deal with it upon its merits, and that it will receive little if any partisan consideration, which result more than anything else would inspire confidence in the permanence of this legislation, and would reflect a united instead of a divided country as to maritime policy. Such a result, so attained, would undoubtedly lead to the rapid rehabilitation of our oversea shipping, with all of its incidental advantages to our farmers and manufacturers in securing and holding new and enlarged foreign markets for their surplus products.

PUBLIC LIBRARY
ASTOR, LENOX AND
TILDEN FOUNDATIONS.



VOL. XXXII. CLEVELAND, AUGUST 10, 1905. No. 6.

Blue Book of American Shipping

AMERICA'S STANDARD MARINE DIRECTORY
(Tenth Annual Edition)

It isn't a book of fiction but a valuable work of reference which should be in the hands of everybody interested in shipping affairs. Serviceably and attractively bound in cloth—five hundred pages 10 x 7 in.

A Few Index Headings.

1
9
0
5
E
D
I
T
I
O
N

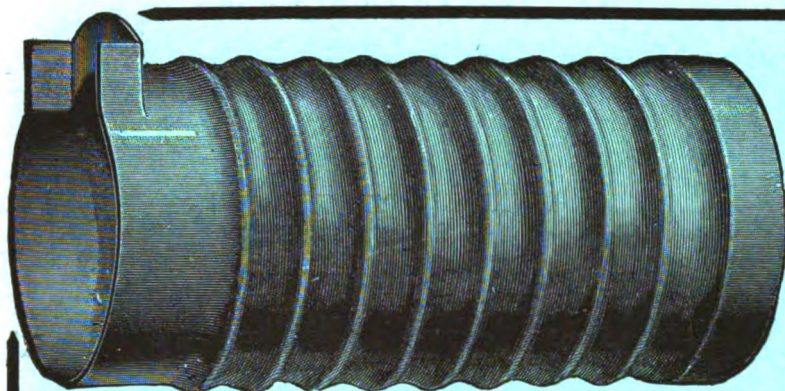
- Admiralty Lawyers of the United States.
- Boiler manufacturers—marine—Seaboard, Western Rivers and Foreign.
- Cargo Records of largest lake freighters.
- Commerce of the Great Lakes—total amount of freight.
- Engineers superintending principal lines in United States.
- Gas, gasoline engine and gasoline launch builders of the United States.
- Iron furnaces and steel works—lists of.
- Lake Carriers' Association, names and addresses of officers, boards of managers, members, etc.
- Marine business concerns.
- Marine Engineers' Beneficial Association—names and addresses of national officers and secretaries of all branches in the U. S.
- Naval Architects and Marine Engineers, Society of—names and addresses of officers and members.
- Ore and coal dock managers and superintendents, Lake Erie ports.
- Owners of Vessels—principal fleets of the world.
- Pig Iron Production in the United States.
- Ship and engine builders of the world.
- U. S. engineers, names and addresses, with details of public works under their direction.
- Vessel owners of the world.
- Yacht and launch builders and owners of the United States.

1
9
0
5
E
D
I
T
I
O
N

Price Five Dollars, Expressage Prepaid **We should have your order now—The edition is limited**

THE PENTON PUBLISHING CO.
Cleveland

Generated on 2024-08-27 20:21 GMT / https://hdl.handle.net/2027/nypl.33433109947634
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google



Morison Suspension Boiler Furnaces

For Land and Marine Boilers

Uniform Thickness—Easily Cleaned
UNEXCELLED FOR STRENGTH

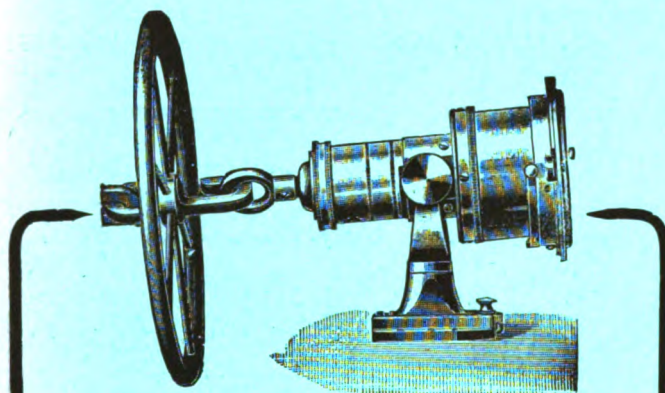
Also Fox Corrugated Furnaces

Manufactured
by

THE CONTINENTAL IRON WORKS,

West and Cayler Sts., NEW YORK.

Near 10th and 23d Sts. Ferries
Borough of Brooklyn.



THE "NEPTUNE" LOG

The "Neptune" Ship Log has
ball bearings for high speeds.
We also make the "CHERUB"
and "HARPOON" Ship Logs.

MAKERS TO THE BRITISH NAVY

THOMAS WALKER & SON

BIRMINGHAM, ENGLAND.

THE BROWN HOISTING MACHINERY CO. INCORPORATED

Sole makers of the "Brownhoist" High Speed Cantilever and Gantry Cranes. The most economical cranes for covering large areas in steel works or ship yards.

Machinery

for handling Structural Work,
Marine Plates, etc., in Ship Building Yards.

**Coal and Ore Handling
Machinery**

Cranes of all Types
Steam Electric and Hand Power.

26 Cortlandt St.
NEW YORK CITY

MAIN OFFICE AND WORKS,
CLEVELAND, O., U. S. A.

Carnegie Building
PITTSBURG, PA.

European Office, 39 Victoria St., LONDON, S. W.

New Metal Cargo Hoisters



Wrought Iron Hook and
Strap, Galvanized Iron
Shells and Sheaves.
Sheaves fitted with Genuine
Star Metaline Bushings with
Metaline Side Bearings.



Star Metaline
Bushing

These Blocks Save the Rope
and Outwear all others.

Send for No. 15 Catalogue
M. A. R. FREE

SELF-OILING

Manufactured only by

BOSTON & LOCKPORT BLOCK CO.

BOSTON, MASS.

LOCKPORT, N. Y.

SHIP MACHINERY, embodying the
latest designs and
many important
patented improvements.

Sole builders of the
Original and Only
**AUTOMATIC
STEAM TOWING MACHINE.**

Established
1857

AMERICAN SHIP WINDLASS CO.

Providence, R. I.

P. O. Box 53

We have completed our new Iron Foundry, and are prepared to execute orders for Castings, guaranteeing first-class work, prompt service and reasonable prices.

Send for illustrated
catalogue

Address **FRANK S. MANTON, President**

MARINE IRON WORKS,
INCORPORATED
BUILDERS OF **MARINE ENGINES** **AND BOILERS**
HIGH PRESSURE
COMPOUND
TRIPLE EXPANSION
PADDLE WHEEL.
COMPLETE OUTFITS OF
MARINE MACHINERY
A SPECIALTY.
STATION A. CHICAGO, ILL.

SUPPLEMENTARY CATALOGUE FREE ON REQUEST.



U.S. Automatic Injector

COSTS LEAST FOR REPAIRS

Has the simplest construction and fewest wearing parts. Is made to last, and does it. Best for stationary and portable boilers and best for marine purposes.


The only perfectly satisfactory injector for traction engines. If feed should be interrupted it restarts automatically the minute suction hose reaches water.

The U. S. Automatic Injector is backed by the recommendation of the U. S. Government and by the endorsement of over 200,000 engineers.


ENGINEER'S RED BOOK—a complete, practical book of dependable information will be sent you free on request. Send us your name and address and we will mail it promptly. Better write today.

Ask for catalog of injectors, grease cups, oil cups, jet pumps, fire plugs, water heaters, etc.

American Injector Co.
DETROIT, U. S. A.




**THE BIG
4
FOR
EVERY
ENGINEER**



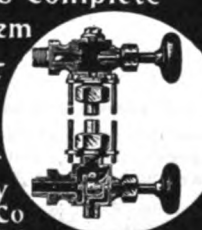
Penberthy Automatic Injector Penberthy Auto Positive Injector

-THIS-
TRADE
PENBERTHY
MARK

is a Guarantee of Excellence.
No Boiler Room is Complete
Without Them



**SIMPLE
RELIABLE
DURABLE
ECONOMICAL**



Penberthy Force Feed Oil Pump Penberthy Injector Co. Detroit, U.S.A. Success Vacuum Auto Water Gauge

OTIS STEEL

SHIP PLATES FLANGE PLATES TANK PLATES STEEL CAR AXLES FORGINGS OF ALL KINDS
"Otis" Fire Box Plates a Specialty.

STEEL CASTINGS FROM 100 TO 100,000 LBS.

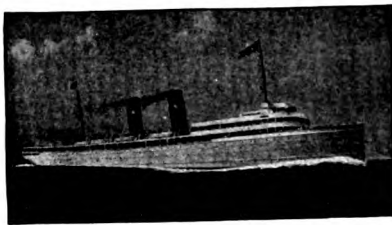
OTIS STEEL CO., Ltd., Head Office and Works, **CLEVELAND, O.**

New York: Thorpe, Platt & Co., 97 Cedar St.
Montreal: Homer Taylor, 183 St. James St.

AGENCIES.

St. Louis: C. A. Thompson, 516 N. Third St.
San Francisco: John Woodlock, 154-156 First St.

Detroit: George W. House, Union Trust Building.



The American Ship Building Company

MAIN OFFICE CLEVELAND, OHIO

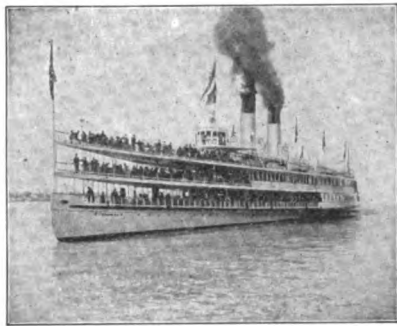
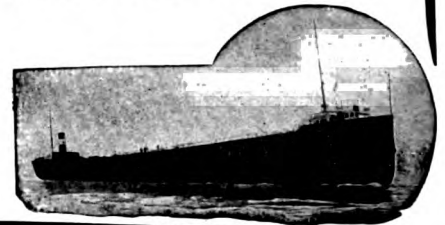
Marine and
Stationary Engines

STEEL SHIPS

Boilers and
Auxiliary Machinery

Sole Agents for the Lakes for the Ellis & Eaves Induced Draft System,
as applied to boilers, giving increased power and great economy.

WORKS AT CLEVELAND AND LORAIN.



Detroit Ship Building Company

SHIP AND ENGINE BUILDERS

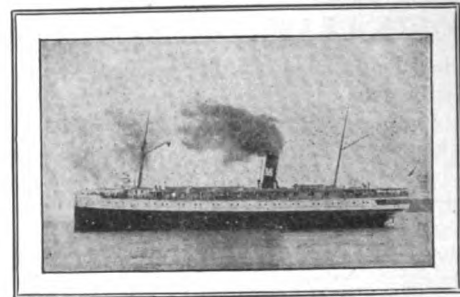
Sole Owners for the Lakes and Atlantic Coast
of the HOWDEN HOT DRAFT SYSTEM as
applied to Boilers, giving increased power and
great economy.

Steel Ship Yard located at Wyandotte, Michigan
Wooden Ship Yards and Dry Docks, Foot of Or-
leans Street, and Foot of Clark Ave., Detroit, Mich.

Alexander McVittie, President and Manager
William C. McMillan, Vice President
M. E. Farr, Secretary and Treasurer
Charles B. Calder, General Superintendent
Frank E. Kirby, Consulting Engineer

WM. L. BROWN, Pres.
J. C. WALLACE, Vice-Pres.
R. C. WETMORE, Sec'y and Treas.
C. W. FREY, Ass't. Treas.
ALFRED G. SMITH, Gen'l Supt.

Chicago Ship Building Company

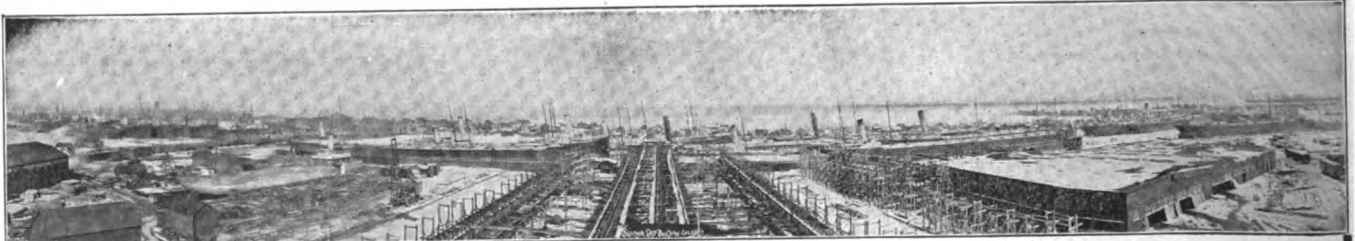


STEEL SHIPS

Passenger or Freight

ANY SIZE

Yards, Dry Docks and Repair
Shops at South Chicago, Ill.



The Superior Ship Building Company

SHIP AND ENGINE BUILDERS

Dry Docks and Repairs of all kinds

Large stock of material always
on hand for Repairing Wooden
and Metal Ships.

Repairing promptly attended
to, Night or Day.

WEST SUPERIOR

WISCONSIN

Customers Write our Ads

HENRY WINEMAN, JR.
LUMBER AND VESSELS

DETROIT, MICH., May 10th, 1905.



THE DEVICE REFERRED TO

Power Specialty Co.

500 Washington St.

DETROIT

Power Specialty Co.,
Gentlemen:—

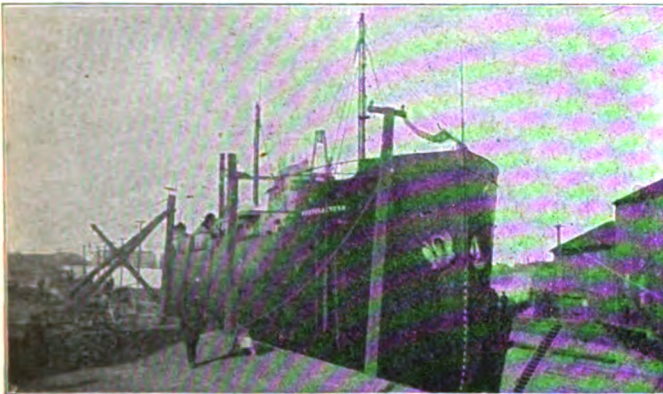
I am very much pleased to state that the Diamond Steam Flue Blowers placed on the Steamer "City of Berlin" have been thoroughly tested out. I find that they not only clean the flues entirely, but remove all the soot in the smoke box and britching.

Heretofore when blowing the flues it was necessary to check down the engine and the steam would run down, but with the Diamond Blowers the steam is practically maintained all the time without checking down the engine while a boat is running.

I cheerfully recommend your Blowers to any one for either Marine or stationary boilers.

Yours truly,

Henry Wineman, Jr.



Milwaukee Dry Dock Company

MILWAUKEE

WISCONSIN

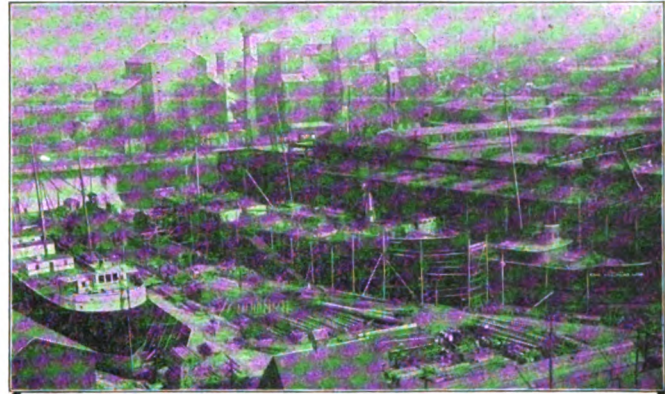
SHIP REPAIRS OF ALL KINDS

We have two ship yards offering every facility for the repair of both steel and wooden vessels. South Yard Dock is 450 ft. long on keel blocks; 460 ft. over all; 60 ft. width of gate and 16 ft. over sill. West Yard Dock is 312 ft. on keel blocks; 45 ft. width of gate and 12 ft. over sill. Rudder pit in each dock.

Electric lights for night work.

MAIN OFFICE AT SOUTH YARD
Foot of Washington Street

Telephone Main 3



The Buffalo Dry Dock Company

BUFFALO

NEW YORK

Operating four Docks, Sixty-Ton
Shear Legs, and in every way
equipped with modern plant for
the building and economical re-
pairs of **STEEL AND
WOODEN SHIPS.**

EDWARD SMITH, President ADAM STEEL, Superintendent
WILLIAM KNIGHT, Asst. Sec'y and Treas.

Office Telephone, 515 Seneca. President's Office Telephone, 2329 Seneca.
President's Residence Telephone, 209 Bryant. Asst. Sec'y's Telephone, 324 North.
Superintendent's Telephone, 2294 Howard.



CRAIG SHIP BUILDING CO.

TOLEDO, OHIO.

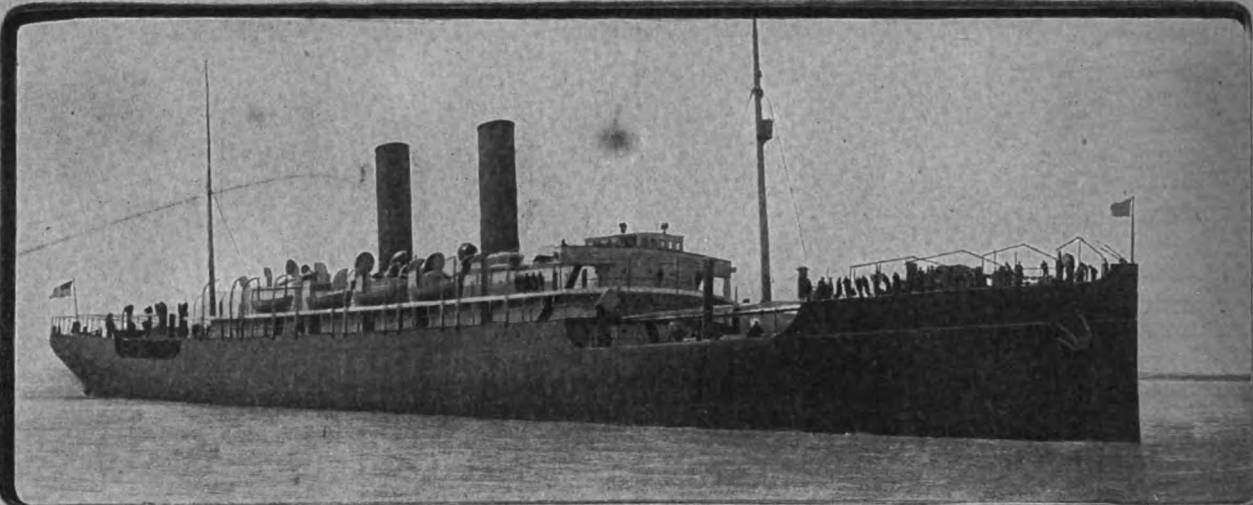
METAL - AND - WOODEN - SHIP - BUILDERS.

New Dry Dock—525 feet long, 110 feet wide on top,
55 feet wide on bottom, 16 feet of Water on Sill.

Repairs to Metal and Wooden Ships
A SPECIALTY.

OUR SHIPYARD

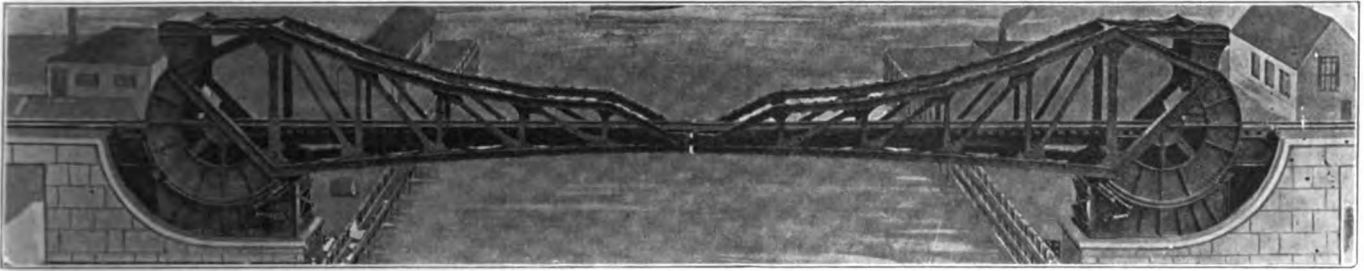
WITH ITS ACCOMPANYING DRY DOCKS
AND WORKS, WAS CAREFULLY DESIGNED,
EQUIPPED AND COMPLETED FOR THE



CONSTRUCTION AND REPAIRING
IN EVERY DETAIL OF

BATTLE SHIPS · ARMORED CRUISERS ·
PROTECTED CRUISERS · GUN BOATS ·
TORPEDO BOATS · TORPEDO BOAT
DESTROYERS · SUBMARINE BOATS ·
OCEAN LINERS · PASSENGER STEAM
ERS · FREIGHT CARRIERS · ETC · ETC ·

NEWPORT NEWS SHIPBUILDING & DRY DOCK CO.
1 BROADWAY NEW YORK — NEWPORT NEWS, VA.

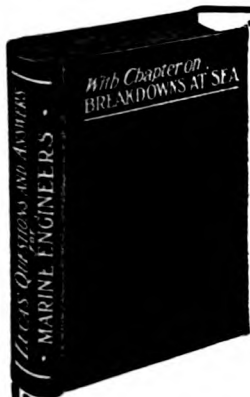


THE COWING LIFT BRIDGE

Write for Plans and
Estimates

(HIGHEST AWARD AT ST. LOUIS, MO.)

JOHN P. COWING
Contracting Engineer
426 Citizens Bldg., Cleveland, O.



Lucas' Questions and Answers for Marine Engineers

Second Revised Edition.
More than a
Hundred Illustrations.

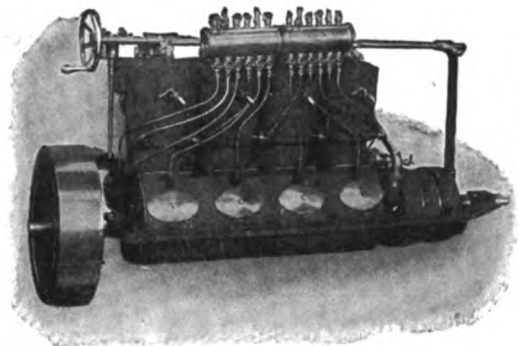
In this second edition, in response to numerous requests, the publishers have added several subjects under the headings "Various Principles of Mathematics useful to the Engineer and Machinist," the United States regulations relating to the examination of Engineers for licenses as Chief, First, Second and Third Engineers, prescribed by the Board of Supervising Inspectors, an introduction relating to the Qualifications and Opportunities for entering the Government and Mercantile Marine Engine Room Service.

Price \$2.00 Postpaid to any address.
Money refunded if book is not entirely satisfactory.

Marine Review - Cleveland, O.

TRUSCOTT

THE DEPENDABLE MARINE MOTOR



Made to withstand the most severe and continuous service. A practical design characterized by the accessibility, compactness and simple ignition, gas producing and oiling features, Perfect control.

Four cycle type two and four cylinders, from 8 to 65 H.P. Smaller sizes of the two cycle type.

Catalogue and copy of The Launch for the asking.

Department 46.

Truscott Boat Mfg. Co.

ST. JOSEPH, MICHIGAN.



Pintsch Gas Lighted Buoys

BURN CONTINUOUSLY

FROM 80 TO 365 DAYS AND NIGHTS WITHOUT ATTENTION AND CAN BE SEEN AT A DISTANCE OF SIX MILES.

Brilliant & Steady Illumination. Economical & Reliable in Operation.

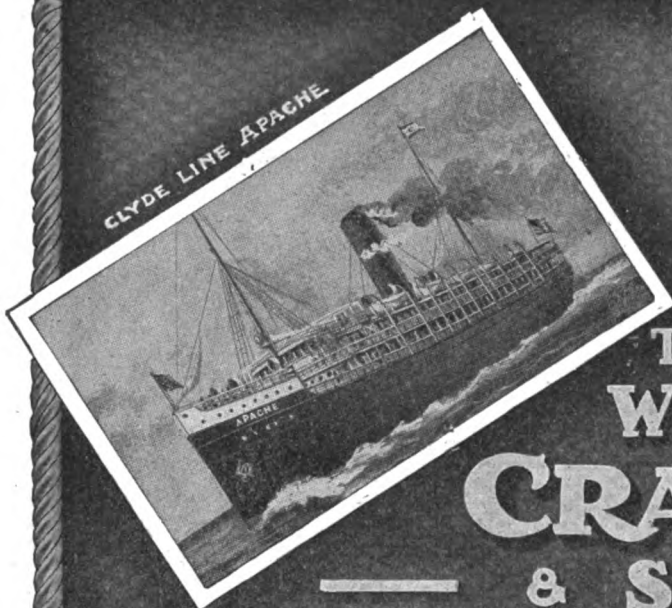
Adopted by the English, German, French, Russian and United States Light House Departments for Channel and Harbor Lighting; over 1800 gas buoys and gas beacons in service.

Controlled by the

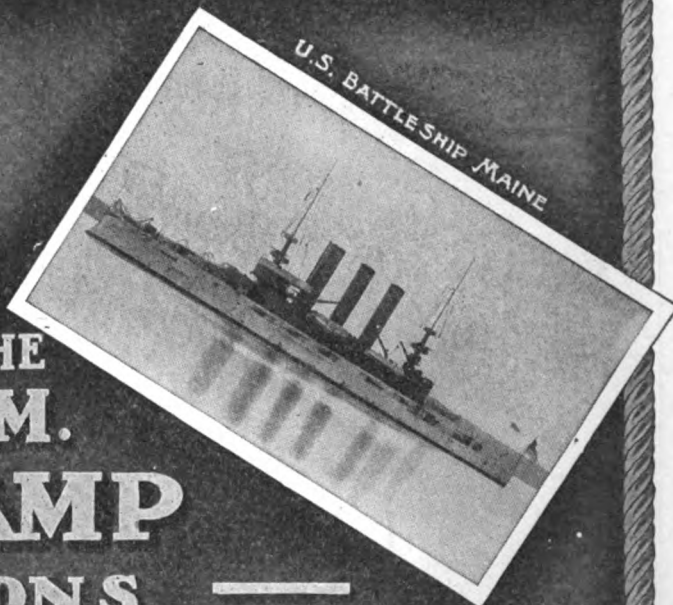
SAFETY CAR HEATING & LIGHTING COMPANY

160 Broadway, NEW YORK CITY.

CLYDE LINE APACHE



U.S. BATTLESHIP MAINE



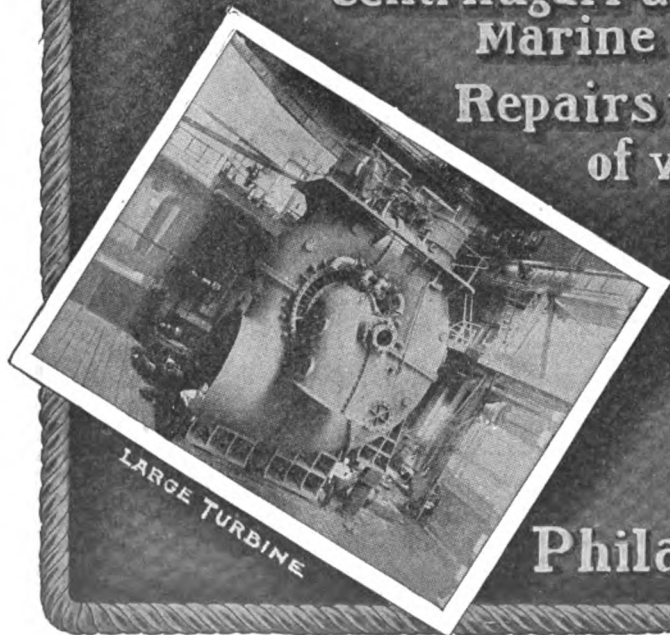
THE
WM.
CRAMP
— & SONS —
SHIP & ENGINE BUILDING Co.
ESTABLISHED 1830

I.P. MORRIS COMPANY
(ESTABLISHED 1829)

KENSINGTON SHIPYARD Co

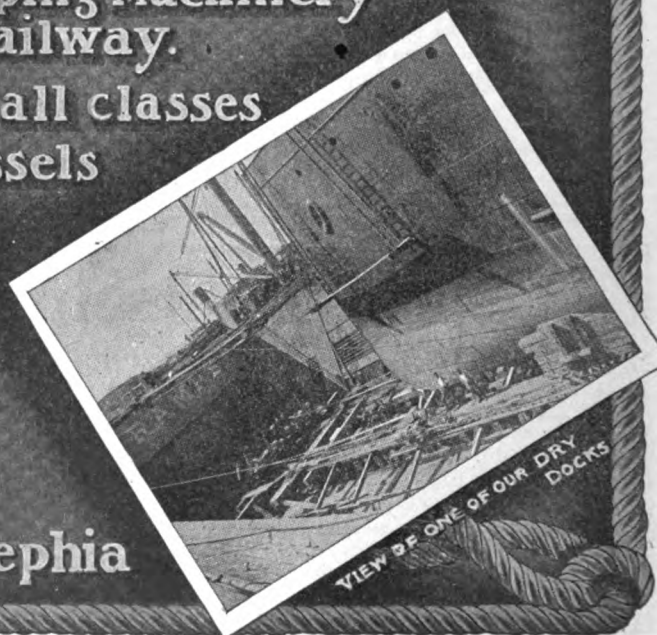
WARSHIPS AND MERCHANT STEAMERS
Pumping, Blowing and Hoisting Engines, Dry Docks
Vertical and Horizontal Turbines
Centrifugal Pumping Machinery
Marine Railway.
Repairs to all classes
of vessels

LARGE TURBINE



Philadelphia

VIEW OF ONE OF OUR DRY DOCKS



CLEAN BOILERS

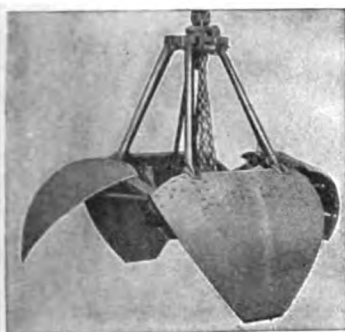
Dearborn Water Treatment made to suit the case. Takes off the scale, keeps it off, stops corrosion and foaming. Send gallon of water for analysis.

DEARBORN DRUG & CHEMICAL WORKS

G. R. CARR,
Mgr. Marine Dept.

16 BRANCH OFFICES IN THE U. S.

227-234 Postal Telegraph Bldg., CHICAGO.

KIESLER AUTOMATIC BUCKETS

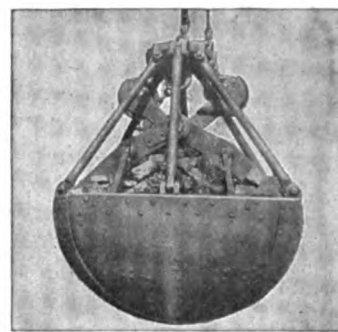
Orange Peel
Open

Orange Peel and Clam Shell Types
for handling Coal, Iron Ore and Excavating

We guarantee our Orange Peel to always fill in large lump Soft Coal and Iron Ore. Has two flat lips and will not damage boats or cars. Are from 30 to 50% lighter than any other buckets. Digging ability due to powerful system of leverage.

Write for Catalogue and Prices.

MAYO & BAILEY 1548 1st Nat'l Bank Bldg.
CHICAGO



Orange Peel Closed
showing load

THE STANLEY B. SMITH COAL AND DOCK CO.,
TOLEDO HARBOR, TOLEDO, OHIO.

1,800 Feet of Dock.

6 McMyler Derricks.

Capacity 3,000 Tons Daily.

Fuel Lighters. —"KANAWHA."
—"PENNSYLVANIA."
—"HOCKING."

Docks. —PENNSYLVANIA R. R.
—HOCKING VALLEY R. R.
—TOLEDO AND OHIO CENTRAL R. R.

SMITH'S COAL DOCK, Detroit River, DETROIT, MICH.

12 Pockets.

Platform.

Low Dock.

Operated by STANLEY B. SMITH & CO.

MARINE SUPPLY COMPANY—STORE AND ICE HOUSE ON DOCK.

PITTSBURG COAL COMPANY

GENERAL OFFICE, LAKE DEPARTMENT, PERRY-PAYNE BUILDING, CLEVELAND, OHIO

Steamboat Fueling Facilities at Various Points on the Great Lakes

CLEVELAND HARBOR { 4 Car Dumpers.
3 Lighters.

FAIRPORT HARBOR { 1 Car Dumper.
1 Lighter.

ERIE HARBOR { 1 Car Dumper.
Fuel Pockets.

ASHTABULA HARBOR { 1 Car Dumper.
1 Lighter.

DETROIT RIVER BRANCH { Docks and Pockets at
Sandwich and Amherstburg.

SAULT RIVER BRANCHES { Dock and Pockets at Detour.
Dock and Pockets at Sault Ste. Marie. (The Port Royal Dock Co.)

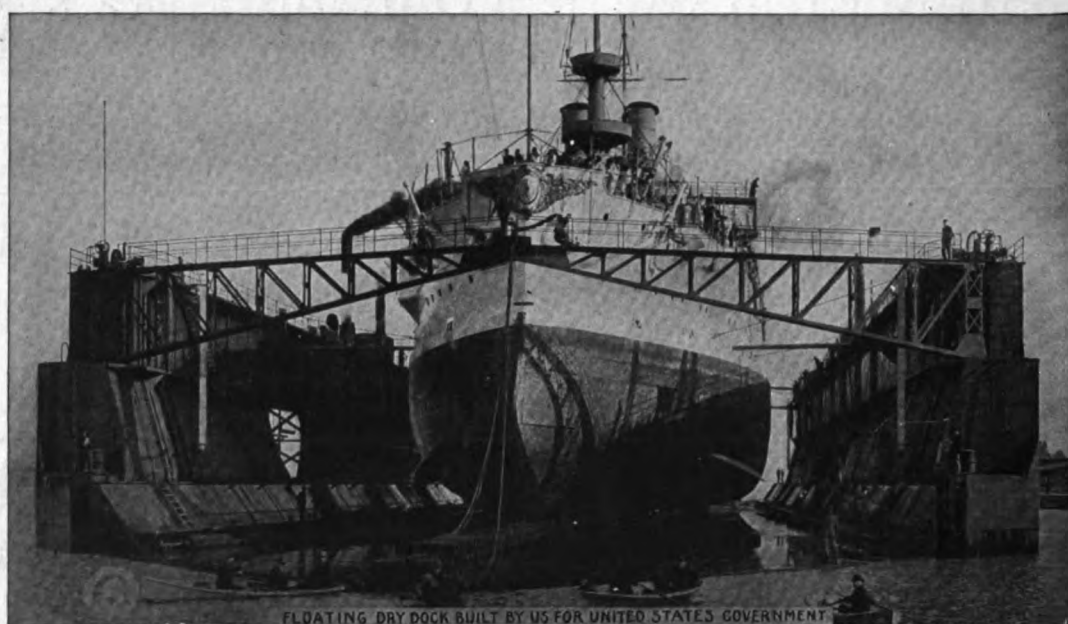
WE FURNISH ONLY THE BEST GRADE OF

PITTSBURG AND YOUGHIOGHENY COAL

MARYLAND STEEL COMPANY

BUILDERS OF STEEL STEAMSHIPS,
TOW BOATS, SAILING VESSELS,
BARGES AND STEAM CRAFT
OF EVERY DESCRIPTION

STEEL FLOATING DRY DOCKS
CAPABLE OF DOCKING
THE LARGEST VESSELS



FLOATING DRY DOCK BUILT BY US FOR UNITED STATES GOVERNMENT

SPARROW'S POINT,
MARYLAND.



CRANDALL'S MODERN MARINE RAILWAYS

SAFE AND RAPID

Built of Steel or Wood
any size

H. I. Crandall & Son Co.
(Incorporated)
CONTRACTING ENGINEERS
East Boston, Mass., U.S.A.

THE ROBERTS SAFETY WATER-TUBE BOILER CO.

Manufacturers of
High Grade

Marine Water Tube Boilers

Generators of the Highest Quality of Steam
NEARLY 1500 IN USE

Send for circulars
and stock sheet

MAIN OFFICE
39 Cortlandt St. New York City

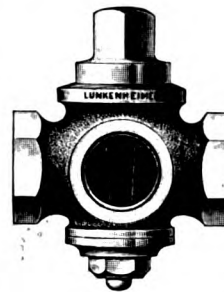
Phone 599 Cortlandt

Works: Red Bank, N. J.
Phone, 49 Red Bank

Cable Address
"Bruniya"

LUNKENHEIMER STOP COCKS

**Positively have no equal.
Guaranteed to be perfectly tight.
Made in great variety and all sizes.**



If your local dealer cannot furnish
them, notify us.

THE LUNKENHEIMER COMPANY

Largest manufacturers of Engineering
Specialties in the World.

General Offices and Works
CINCINNATI, OHIO, U. S. A.

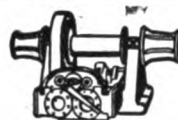
BRANCHES
NEW YORK, 26 Cortlandt Street
LONDON, S. E., 35 Great Dover Street

13 M. R.



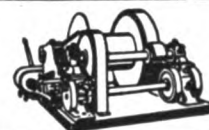
GASOLINE MARINE ENGINES

Suitable for all Boats from 3½ to 200 HP.
Over 100 in successful use.
Also the well known and always
reliable Woolters Gas or Gasolene
Stationary Engines.



HOISTING ENGINES

Of all kinds and sizes, and
for all purposes, especially
for ship use.
Docking and Hauling Engines
and Wire Rope Windlasses.



AUTOMATIC TOWING MACHINES

Somewhat the cheapest, and
altogether the best. Positively
guaranteed.
Automatic Fog Whistle Machines
Steam Steering Engines.

FOR THESE AND OTHER WELL KNOWN SPECIALTIES ADDRESS ALL INQUIRIES TO.

THE CHASE MACHINE CO. Engineers and Machinists, CLEVELAND, OHIO.

New York Shipbuilding Company

Main office and works, Camden, N. J., New York office No. 1 Broadway

Builders of
SHIPS — ENGINES — BOILERS
HEAVY MACHINERY



Launch of "Mongolia," Pacific Mail S. S. Co., July 25, 1903.
615 feet long, 65 feet beam, 51 feet deep.

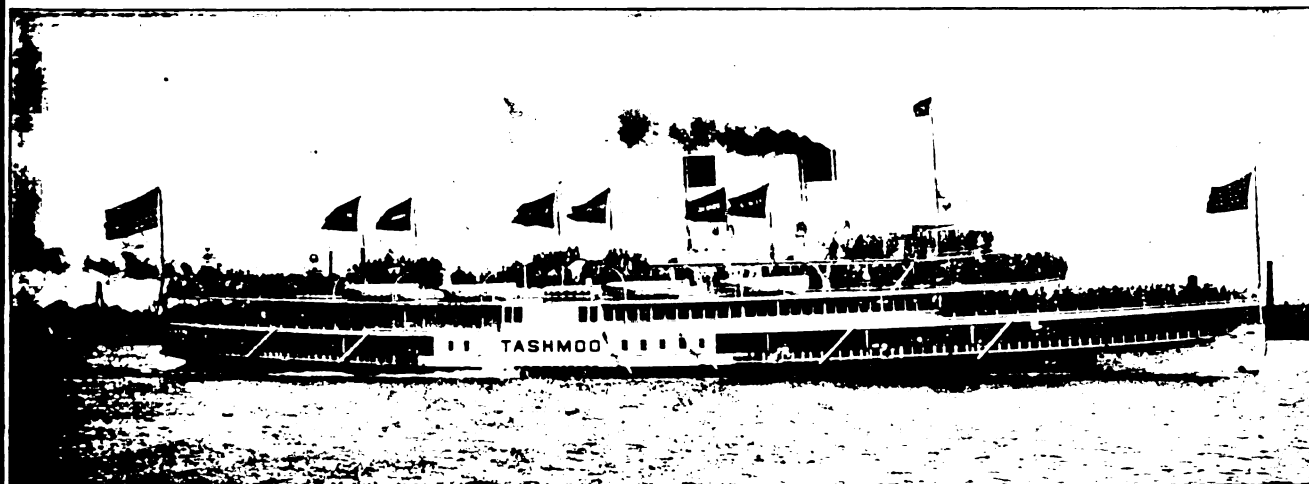
Best Facilities for Repair Work

**Pneumatic and Electric Tools;
ample wharfage accomodation.**

100 ton crane.

Repairs done under shelter.

Beautiful Marine Views



Copyright by Detroit Photographic Co. 1901

Photographs of Great Lakes Vessels.

Photographs of Marine Scenes on the Great Lakes.

Unless otherwise specified, negative size of following Photographs is 7x9 inches.
Price 75 cents each. Postage paid.

Alva.
Angeline, Hold. (Size 10x13—Price \$1.50.)
Angeline, Spar Dock. (Size 10x13—Price \$1.50.)
Argyle. (Thousand Islands).
Argyle. (Thousand Islands).
James Battle. (Detroit Fire Boat).
On the ways.
James Battle. (Detroit Fire Boat).
The launch.
Castalin.
Chippewa. (Canadian).
Chippewa. (American).
City of Alpena.
City of Bangor.
City of Erie at Buffalo Docks.
City of Erie.
Columbia. (On the Ways—Three Views).
Columbia.
Conemaugh.
Coralia, loading at Escanaba Ore Dock. (Size 17x21—Price \$2.00).
Corona.
Corona.
John Craig.
Detroit in the Ice. (Transfer Steamer). Two Views.
M. M. Drake.
Eastern States. (Launch).
Eastern States on First Trip. (Three Views—Broadside, Bow and Stern).
Eastern States. (On the Ways—Three Views).
Isaac L. Ellwood.
Excelsior. (Detroit Ferry).
Fairbairn.
E. C. Frick.
Garland. (Detroit Ferry).
Glidden—Wreck of, in St. Clair Ship Canal.
Greyhound.
Hanna, M. A.
Harlem.
Harvard. (On the Ways).
Harvard. (The Launch).
Harvard. (In the Slip—Two Views).
Helena.
Hennepin.
Holley, Alexander (Whaleback tow-bergo).
India.
Islander. (Thousand Islands—Three Views).
Frank E. Kirby at Put-in-Bay.
Lagonda discharging coal at docks.
Lackawanna.
Mahoning.
Manitou.
Majestic. (Three Views).
Michigan Central in Detroit River. (Winter).
Mohawk.
Montana.
W. B. Morley, wreck in Detroit River, Aug. 6, 1900.
Simon J. Murphy. (On the Ways).

Simon J. Murphy. (On the Ways—Two Views).
Simon J. Murphy, Launch. (Bow in Slip. Stern not yet in Water.)
Neshoto.
New Island Wanderer. (Thousand Islands).
New York. (Thousand Islands—Two Views).
North King. (Thousand Islands).
North Land.
North Land, in the "Soo" Locks. (Two Views).
North Land, at Mackinac Island. (Two Views).
North Land at the Docks, Mackinac.
North Land and North West in Winter Quarters.
North West.
Ongara. (Two Views).
Ontario, in the Ice. (Transfer Steamer).
Pathfinder, in the Locks.
Peerless, at Mackinac Island.
Pere Marquette No. 17.
Plankinton at Northwestern Coal Docks, Duluth.
Pleasure, at Dock (Detroit Ferry).
E. C. Pope.
Princeton.
Ramapo.
W. D. Rees.
Rube Richards, in Ship Canal at Duluth.
St. Lawrence (Thousand Islands).
Ste. Marie, in Mackinac Straits.
Howard L. Shaw. (On the Ways—Three Views).
Howard L. Shaw. (The Launch).
Howard L. Shaw. (In the Slip).
Sir William Siemens.
George Stone.
Superior. (Steel Trust Tender).
Tashmoo. (In Dewey Naval Parade, Detroit River).
Tashmoo, June 9, 1900.
Tashmoo. (Entering St. Clair Flats Ship Canal).
Tashmoo. (Landing at Star Island—Two Views).
Thompson, A. D. (Whaleback).
Toronto. (Thousand Islands).
Toronto. (Thousand Islands—at Alexandria Bay).
Toronto. (Thousand Islands—at Gananoque).
Transport, in Detroit River, Winter. (Car Ferry—Two Views).
Troy.
Uganda, in Ship Canal at Duluth.
United Empire.
Capt. Visger. (Thousand Islands).
Watt, loading at S. S. Ry. Ore Docks, Marquette.
Wells, Frederic B.
E. P. Wilbur.
Western States. (Size 10x13—Price \$1.50).
Yosemite.

ASHTABULA, OHIO.

Harbor Entrance.
L. S. & M. S. Ry. Ore Docks.
L. S. & M. S. Ry. Ore Docks—unloading ore.
L. S. & M. S. Ry. Ore Docks—ore on docks.
Car Dumping Machine—two views.
Fueling Lighter with Clam Shell Hoist.

BUFFALO, N. Y.

Harbor Entrance.
City Ship Canal.
Great Northern Elevator and Ship-ping.
Great Northern Elevator—unloading grain.
River and Elevators.
River and Elevators, foot of Michigan St.
River and Elevators, foot of Main St.
C. & B. Line Freight Sheds.
Northern Steamship Co.'s Winter Quarters.
"An Old Timer" at C. T. T. Elevator.
Lackawanna Coal Chutes, two views.
Lackawanna Ore Docks—unloading ore.
Lackawanna Ore Docks—unloading ore and loading coal.
Unloading Ore from Whaleback, two views.
Unloading Wheat into Elevators, two views.

CHICAGO, ILL.

Chicago River Elevators.
Lake Front, from Illinois Central Station.
Illinois Steel Works and Harbor Entrance, South Chicago.

CLEVELAND, O.

Cleveland Harbor from Lake View Park.
American Steel & Wire Co.'s Plant—7x17 inches, Price \$1.75.
Ellsworth Coal Chutes—Dumping Car, two views.
Cleveland & Pittsburg Ore Docks, two views.
Ore Docks and Harbor, two views—7x17 inches, Price \$1.75.
Globe Iron Works Ship Yard.
Globe Iron Works Ship Yard, Laying Keel of No. 400.

CONNEAUT, O.

Harbor Entrance.
Unloading Ore—Brown Conveying Hoist, two views.
Unloading Ore—Clam Shell Plant.
Car Dumping Plant, two views.

DETROIT, MICH.

Water Front, Detroit, from Windsor—7x17 inches, Price \$1.75.
Winter in Detroit River.
Car Ferry Turning in Ice, two views.
"Michigan Central" Entering Slip.
Old Timers on the Detroit River.
Crossing Detroit River in Winter.

DULUTH, MINN.

Great Northern Elevator.
Peavey Elevator.
Ship Canal (Looking in) two views.
Ship Canal (Looking out).
Flour Mills.
Northwestern Coal Docks.
Philadelphia & Reading Coal Docks.
The Harbor.
The Bluffs.
"Last Trip from Duluth."

ERIE, PA.

Anchor Line Docks and Pennsylvania R. R. Co.'s Ore and Coal Docks.
Pennsylvania R. R. Coal Trestle.
Pennsylvania R. R. Co.'s Docks, Unloading Ore.
Hanna's Ore Plant.
Coal Trestle and Car Dumping Plant.

OSWEGO, N. Y.

Coal and Ore Docks. Panoramic View, 7x17 inches, Price \$1.75.

ST. CLAIR FLATS.

Str. Tashmoo Entering Ship Canal.
A Freighter Leaving Ship Canal.
Lake Tashmoo Old and New.
Nightfall on the River.
A Lumber Tow.

MARQUETTE, MICH.

Str. James Watt Loading at S. S. Ry. Ore Docks.
Presque Isle Ore Docks.
Light House Point.
Steamer Lagonda discharging coal at S. S. Ry. Coal Docks.
Steamers at the S. S. Ry. Ore Docks.

MACKINAC, MICH.

Str. North Land at the Dock.

SAULT STE. MARIE, MICH.

Loading a Big Steamer.
Locks showing high and low level.
The Locks.
General View of Locks from Offices.
Poe Lock, from below, closed.
Poe Lock, from below, open.
Poe Lock, from above.
Poe Lock, with Whaleback.
Whaleback Str. Pathfinder in the Locks.
St. Marys River, South from the Locks.
Weitzel Lock, from above.
Weitzel Lock, from below.
Str. North Land Passing Locks, two views.
Upper Entrance to Lock Canal.
Gate Mechanism.
Interior of Power House.
Canadian Lock from Upper End.
Canadian Lock from Lower End.
Steamers Entering and Leaving Poe Locks.
The Rapids, looking up.
The Rapids, looking across.
Indians fishing in the rapids.

FOR SALE BY

The Marine Review, Cleveland.

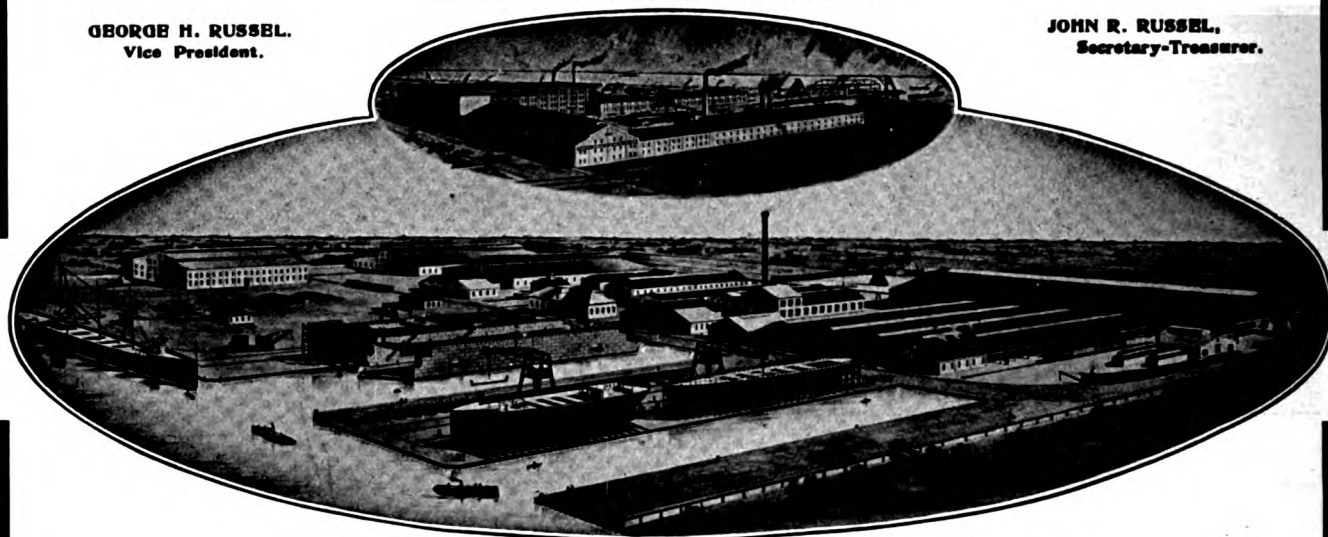
GREAT LAKES ENGINEERING WORKS

DETROIT, MICH.

ANTONIO C. PESSANO, President and Gen. Mgr.

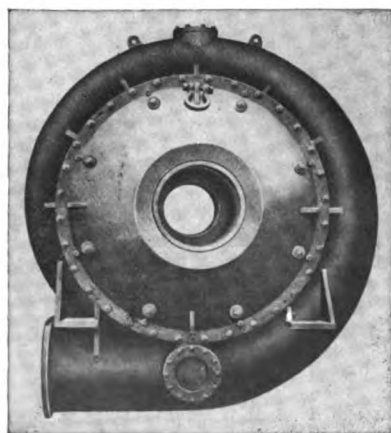
GEORGE H. RUSSEL,
Vice President.

JOHN R. RUSSEL,
Secretary-Treasurer.



**Designers and Builders of
Steel Freight and Passenger Ships.
Steel Car Ferries. = Marine Engines.**

Hydraulic Dredges.



Our Engines and Pumps
are in service in every
important section of the
United States, including
the Philippine Islands.

BELLEVILLE WATER-TUBE BOILERS

NOW IN USE (MARCH, 1905)

On Board Sea-going Vessels, NOT INCLUDING New Installations Building or Erecting.

French Navy	-	-	-	-	-	-	-	-	360,560 H. P.
English Royal Navy	-	-	-	-	-	-	-	-	966,300 "
Russian Imperial Navy	-	-	-	-	-	-	-	-	253,800 "
Japanese Imperial Navy	-	-	-	-	-	-	-	-	122,700 "
Austrian Imperial Navy	-	-	-	-	-	-	-	-	56,700 "
Italian Royal Navy	-	-	-	-	-	-	-	-	32,500 "
Chilian Navy	-	-	-	-	-	-	-	-	26,500 "
Argentine Navy	-	-	-	-	-	-	-	-	13,000 "
The "Messageries Maritimes" Company	-	-	-	-	-	-	-	-	87,600 "
Chemins de fer de l'Ouest: (The French Western Railway Co.)	Steamships								
plying between Dieppe and Newhaven	-	-	-	-	-	-	-	-	18,500 "
Compagnie Generale Transatlantique	-	-	-	-	-	-	-	-	1,500 "
Total Horse Power of Boilers in Use									1,939,660

Société Anonyme des Etablissements Delaunay Belleville

CAPITAL: 6,000,000 FRANCS

Works and Dock Yards of the Ermitage at Saint-Denis (Seine), France.

Telegraphic Address: Belleville, Saint-Denis-Sur-Seine

Geo. L. McCurdy

169 Jackson Boulevard

CHICAGO ILLINOIS

INSURANCE

HULLS and CARGOES

DIRECT REPRESENTATIVE OF LEADING
AMERICAN AND FOREIGN UNDERWRITERS

BLACK & GALVANIZED SHEETS

All sizes for stock or mill shipment.

The famous "Apollo" Brand.

See Monthly Stocklist.

Also Roofing and Siding.

Write us for prices.

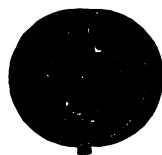
THE
BOURNE-FULLER CO.

IRON STEEL

PIG IRON

COKE

Cleveland, Ohio.



ASHTON

Cam Lever Pop Safety Valves
and Non-Corrosive
Steam Gauges.

give highest efficiency and durability.
Specify them and get the best.

The Ashton Valve Co.

Boston

New York

Chicago

U. S. A.

Buyers' Directory of the Marine Trade

For a more complete classification than that represented by advertisers in the Marine Review, see the BLUE BOOK OF AMERICAN SHIPPING, marine and naval directory of the United States, published by The Marine Review, Cleveland.

See accompanying index of Advertisers for full addresses of concerns in this directory.

AIR COMPRESSORS, AIR HOISTS, ETC.

Great Lakes Engineering Works.....Detroit.
Mietz, Aug.New York.

AIR PORTS, DEAD LIGHTS, ETC.

Marine Mfg. & Supply Co.....New York.

AIR PUMPS AND APPLIANCES.

Fore River Ship & Engine Co., Quincy, Mass.
Great Lakes Engineering Works.....Detroit.

ANCHORS.

Bowers, L. M. & Co.....Binghamton, N. Y.

ANTI-FRICTION METALS.

Cramp, Wm. & Sons.....Philadelphia.

ARTIFICIAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Sturtevant, B. F., Co.....Hyde Park, Mass.

ASH EJECTORS.

Great Lakes Engineering Works.....Detroit.

ATTORNEYS AND PROCTORS IN ADMIRALTY.

Gilchrist, Albert J.....Cleveland.
Goulder, Holding & Masten.....Cleveland.
Hoyt, Dustin & Kelley.....Cleveland.
Jenkins, Russell & Eichelberger.....Cleveland.
Kremer, C. E.....Chicago.
MacDonald, Ray G.....Chicago.
Potter & Potter.....Buffalo.
Shaw, Warren, Cady & Oakes.....Detroit.
White, Johnson, McCaslin & Cannon Cleveland

BAROMETERS, MARINE GLASSES, ETC.

Ritchie, E. S. & Sons.....Brookline, Mass.

BELT CONVEYORS.

Link Belt Machinery Co.....Chicago.

BLOCKS, SHEAVES, ETC.

Boston & Lockport Block Co.....Boston, Mass.
Cleveland Block Co.....Cleveland.

BLOWERS.

Power Specialty Co.....Detroit.
Sturtevant, B. F. Co.....Hyde Park, Mass.

BOAT BUILDERS.

Drein, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, David.....New York.
Lane & DeGroot.....Long Island City, N. Y.
Marine Construction & D. D. Co.....N. Y.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P. & Co. Winthrop Harbor, Ill.

BOILER CLEANING DEVICE.

Power Specialty Co.....Detroit.

BOILER COMPOUNDS.

Dearborn Drug & Chemical Works.....Chicago.

BOILER MANUFACTURERS.

Almy Water Tube Boiler Co., Providence, R. I.
American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Chicago Ship Building Co.....Chicago.
Cramp, Wm. & Sons.....Philadelphia.
Dearing Water Tube Boiler Co.....Detroit.
DeLauney, Belleville & Co., St. Denis, France.
Detroit Ship Building Co.....Detroit.
East End Boiler Works.....Detroit.
Fletcher, W. A. & Co.....Hoboken, N. J.
Fore River Shipbuilding Co.....Quincy, Mass.
Georgian Bay Engineering Works.....Midland, Ont.
Great Lakes Engineering Works.....Detroit.
Kingsford Foundry & Machine Works.....Oswego, N. Y.
Marine Iron Works.....Chicago.

BOILER MANUFACTURERS—Continued.

Maryland Steel Co.....Sparrows Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher Water Tube Boiler Co.....New York.
Newport News Ship Building Co.....Newport News, Va.
New York Shipbuilding Co.....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co.....Duluth, Minn.
Quintard Iron Works Co.....New York.
Roberts Safety Water Tube Boiler Co.....New York.
Stirling, The Co.....New York.
Superior Ship Building Co.....Superior, Wis.
Taylor Water Tube Boiler Co.....Detroit.

BOILER RIVETS.

Bourne-Fuller Co.....Cleveland.

BOILER STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.

Falls Hollow Staybolt Co., Cuyahoga Falls, O.

BRASS AND BRONZE CASTINGS.

Cramp, Wm. & Sons.....Philadelphia.
Fore River Ship & Engine Co., Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Lunkenheimer Co.....Cincinnati.
Macbeth Iron Co.....Cleveland.

BRIDGES, BUILDERS OF.

Cowing, John P.....Cleveland.
Scherzer Rolling Lift Bridge Co.....Chicago.

BUCKETS, ORE AND COAL.

Brown Hoisting & Conveying Machine Co.....Cleveland.
McMyler Mfg. Co.....Cleveland.
Mayo & Bailey.....Chicago.

BULKHEAD DOORS, WATERTIGHT.

"Long Arm" System Co.....Cleveland.

CABIN AND CABINET FINISHING WOODS.

Martin-Barriss Co.....Cleveland.

CANVAS SPECIALTIES.

Baker & Co., H. H.....Buffalo.
Bunker, E. A.....New York.
Upson-Walton Co.....Cleveland.

CAPSTANS.

American Ship Windlass Co., Providence, R. I.
Hyde Windlass Co.....Bath, Me.
Marine Mfg. & Supply Co.....New York.

CEMENT, IRON FOR REPAIRING LEAKS.

Smooth-On Mfg. Co.....Jersey City, N. J.

CHAINS.

Woodhouse Chain Works.....Trenton, N. J.

CHAIN CONVEYORS, HOISTS.

Brown Hoisting Machinery Co. (Inc.).....Cleveland.
General Electric Co.....Schenectady, N. Y.

CHAIN HOISTS.

Boston & Lockport Block Co.....Boston, Mass.

CHARTS.

Penton Publishing Co.....Cleveland.
Potter, J. D.....London.

CLOCKS (Marine and Ship's Bell) AND CHRONOMETERS.

Ashton Valve Co.....Boston.
Ritchie, E. S. & Sons.....Brookline, Mass.

COAL PRODUCERS AND SHIPPERS.

Hanna, M. A. & Co.....Cleveland.
Ironville Dock & Coal Co.....Toledo, O.
Pickands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.

COAL AND ORE HANDLING MACHINERY.

Brown Hoisting Machinery Co. (Inc.).....Cleveland.
Link Belt Machinery Co.....Chicago.
McMyler Mfg. Co.....Cleveland.

COMPASSES.

Ritchie, E. S. & Sons.....Brookline, Mass.

CONDENSERS.

Great Lakes Engineering Works.....Detroit.
Thropp & Sons Co., John E.....Trenton, N. J.

CONTRACTORS FOR PUBLIC WORKS.

Breymann & Bros., G. H.....Toledo.
Buffalo Dredging Co.....Buffalo.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Great Lakes Dredge & Dock Co.....Chicago.
Hickler Bros.....Sault Ste. Marie, Mich.
Lake Superior Contracting & Dredging Co.....Duluth, Minn.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H. Milwaukee.
Sullivan, M.....Detroit.

CORDAGE.

Baker & Co., H. H.....Buffalo.
Upson-Walton Co.....Cleveland.

CORK JACKETS AND RINGS.

Armstrong Cork Co.....Pittsburg, Pa.
Kahnweiler's Sons, D.....New York.

CRANES, TRAVELING.

Brown Hoisting Machinery Co.....Cleveland.
McMyler Mfg. Co.....Cleveland.

DIVING APPARATUS.

Morse, A. J. & Son.....Boston.
Schrader's Son, Inc., A.....New York.

DREDGING CONTRACTORS.

Breymann & Bros., G. H.....Toledo.
Buffalo Dredging Co.....Buffalo.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Great Lakes Dredge & Dock Co.....Chicago.
Hickler Bros.....Sault Ste. Marie, Mich.
Lake Superior Contracting & Dredging Co.....Duluth, Minn.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H. Milwaukee.
Sullivan, M.....Detroit.

DREDGING MACHINERY.

Quintard Iron Works Co.....New York.

DRYING APPARATUS.

Sturtevant, B. F. Co.....Hyde Park, Mass.

DRY DOCKS.

American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Buffalo Dry Dock Co.....Buffalo.
Chicago Ship Building Co.....Chicago.
Craig Ship Building Co.....Toledo, O.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Lockwood Mfg. Co.....East Boston, Mass.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co.....Newport News, Va.
Shipowners Dry Dock Co.....Chicago.
Superior Ship Building Co.....Superior, Wis.

ELECTRIC HOISTS AND CRANES.

General Electric Co.....Schenectady, N. Y.

ELECTRIC LIGHT AND POWER PLANTS.

General Electric Co.....Schenectady, N. Y.
Mietz, Aug.New York.
Sturtevant, B. F. & Co.....Hyde Park, Mass.
Thropp & Sons, John E.....Trenton, N. J.

WANTED and FOR SALE Department.**PROPOSALS.**

U. S. ENGINEER OFFICE, Detroit, Mich., July 14, 1905. Sealed proposals for dredging at Saginaw and Sebawaing Rivers, Mich., will be received here until 3:00 p. m., August 14, 1905, and then publicly opened. Information furnished on application. LAN-SING H. BEACH, Major, Engrs. Aug. 10

U. S. ENGINEER OFFICE, Grand Rapids, Mich., August 7, 1905. Sealed proposals for extension of West Breakwater at Petoskey, Mich., will be received here until 3 p. m., September 6, 1905, and then publicly opened. Information furnished on application. M. B. ADAMS, Col. Engrs. (Aug. 31.)

PROPOSALS for Dredging Pumps, etc., U. S. Engineer Office, Custom House, St. Louis, Mo., Aug. 9, 1905. Sealed proposals, in triplicate, for furnishing centrifugal dredging pumps, pillow-blocks, tie-beams, pipe lines and flexible joints will be received here until 12 noon, Sept. 8, 1905, and then publicly opened. Information furnished on application. THOS. L. CASLEY, Major, Engrs. Aug. 31

FOR SALE.**For Sale.**

One marine boiler and engine for sale, suitable for steam barge. Address E. B. Johnson, Chaumont, N. Y.

For Sale.

Fore and aft Compound Marine Engine, size 6 x 12 x 6, and in perfect condition. Built by the Marine Iron Works, Chicago. Inquire of H. B. Larsen, Manistee, Mich.

Marine Gasoline Engine.

FOR SALE.—A 4-cylinder, 25-H. P. Leighton gasoline marine engine, with reversible propeller; perfect condition; slightly used; cost \$1,200; sell for \$500 cash. Box 577, Syracuse, N. Y.

For Sale, Cheap.

Second-hand boom-chains, all sizes, one thousand feet 6-in. tow-line, all in good condition. One new Snelling steerer. BAYFIELD TOWING CO., Bayfield, Wis. 8-24

FOR SALE.**For Sale.**

Naphtha Launch "Ruth," 18 ft. Seats 10 people; air-tight compartments; 3 H. P. Regal engine, giving speed of 8 miles. Boat and adjustable canopy top, cushions, etc., all new this spring and in first-class order. Price \$195.00. LUCIEN D. CLARK, M. D., 1026 W. Bancroft St., Toledo, O. 8-17

For Sale.

Charter or trade for larger boat after Aug. 25, the freight and passenger Str. Hazel. Length 90 ft., beam 18 ft. Inquire of R. B. RICE, Grand Haven, Mich. 8-31

For Sale.

New, up-to-date Gasoline Launch, 53 ft. on keel, 12-ft. beam, cabin space 34 ft.; will seat fifty people comfortably; state room, two berths to accommodate four; 40 H. P. engine; light plant; galley, toilet; cushion seats and backs; gasoline tank 215 gallons; ice house, forward capacity, two tons; windlass, towing bits, and everything complete; draws 3 ft. of water; speed 12 to 13 knots per hour. This boat is complete in every particular. Price, \$4,000.00. E. C. Brown, Newport News, Va.

TUGS AND LUMBER SCOW.

One small harbor tug Alice Shipman, one large tug Temple Emery and large lumber tow barge. Can be seen at Two Rivers, Wisconsin.

Best offer wanted.

Fidelity Trust Company, Trustee,

Two Rivers Manufacturing Co.
Milwaukee, Wisconsin.

FOR SALE.**Crane.**

For Sale Cheap—Brown Hoisting Machinery Co. all iron Post Jib Crane, 15 ton capacity, 35 ft. 3 in. radius of hook, 18 ft. 6 in. lift. The hoisting mechanism is driven by dust-proof motor.

Photograph and price mailed on application.

A. Garrison Foundry Co., Pittsburg, Pa.

For Sale.

One dredge hoisting engine, double cylinders, 14½ by 14 in. stroke; clutch gear, on very heavy cast frame, drum fitted for 1½ in. cable and well suited for hard digging; all as good as new. Address JAMES PRYOR, Houghton, Mich.

Marine Boiler.

For Sale.—One 50 H. P. Scotch Marine Boiler, 10 ft. long, 78 in. diameter, 160 lbs. steam pressure. Manufactured by Ritter & Co., Buffalo, N. Y. In first-class shape. For particulars, write The Detroit Stove Works, Detroit, Mich. t. f.

Dock Lease for Sale.

Long lease of valuable dock at Sault Ste. Marie, Mich. Will sell or rent for long or short term. F. R. Warner, Trustee, Sault Ste. Marie, Mich.

For Sale.

A steam barge, with capacity of about 250,000 M. lumber. P. P. Schnorbach, Muskegon, Mich.

FOR SALE \$3500.00.**The Steamer Gordon Campbell.**

Burned on spar-deck, forward only—easy to cut down to lumber barge, to carry million feet. Machinery, boilers and hull untouched and in good condition. Boat in dry dock and thoroughly overhauled last summer. Can be seen in Chicago. Address Room 613, 59 Dearborn St., Chicago. t f

FOR SALE**The D. Robeson SHIP CHANDLERY BUSINESS at PORT HURON, MICH.**

Established 36 years. Does a large business in the sale of Cordage, Duck, Wire Rope, Blocks, Paints, Oils, Varnishes, Brushes; Roofing, Rubber Hose, Building Paper. Manufacturer of Sails, Flags, Tents and Awnings. Building is 40 x 70, two story brick, located close to boat landing. Ill health reason for disposing of real estate and business. For further particulars, write to

SCHOOLCRAFT & CO., Port Huron, Mich.

**For Sale**

Launch Factory and stock of engines and high grade hulls, finished and unfinished. One of the best factories in the country, with new machinery, good buildings, a fine testing tank, and excellent facilities for launching and shipping. Located above high water on the Ohio River. Frontage of ground, 250 ft., depth, 800 ft. Also a stock of fine launches 18 to 30 ft. long, lumber and other material. This property must be sold. Stockholders are engaged in other business and can not give it attention. With proper management and attention a fine business can be established. Write for particulars, or come and see the plant.

Neptune Launch & Mfg. Co.

Evansville,

Indiana.

Buyers' Directory of the Marine Trade.—Continued.

ENGINE BUILDERS, MARINE.

American Ship Building Co.....Cleveland.
 Atlantic Works.....East Boston, Mass.
 Chicago Ship Building Co.....Chicago.
 Chase Machine Co.....Cleveland.
 Cramp, Wm. & Sons.....Philadelphia.
 Craig Ship Building Co.....Toledo, O.
 Detroit Ship Building Co.....Detroit.
 Fletcher, W. & A. Co.....Hoboken, N. J.
 Fore River Shipbuilding Co.....Quincy, Mass.
 Great Lakes Engineering Works.....Detroit, Mich.
 Hall Bros.....Philadelphia.
 Lockwood Mfg. Co.....East Boston, Mass.
 Marine Iron Works.....Chicago.
 Maryland Steel Co.....Sparrows Point, Md.
 Mietz, Aug.....New York.
 Milwaukee Dry Dock Co.....Milwaukee.
 Mosher, Chas. D.....New York.
 Moulton Steering Engine Co.....New York.
 Newport News Ship Building Co.....Newport News, Va.
 New York Shipbuilding Co.....Camden, N. J.
 Northwestern Steam Boiler & Mfg. Co.....Duluth, Mich.
 Quintard Iron Works Co.....New York.
 Roach's Ship Yard.....Chester, Pa.
 Sheriffs Mfg. Co.....Milwaukee.
 Superior Ship Building Co.....Superior, Wis.
 Thropp, J. E. & Sons Co.....Trenton, N. J.
 Trout, H. G.....Buffalo.

ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.

Cory, Chas. & Son.....New York.
 Marine Mfg. Supply Co.....New York.

ENGINE TESTING.

Kreer & Parsons.....Chicago.

ENGINEERING SPECIALTIES AND SUPPLIES.

Crane Co.....Chicago.
 Kieley & Mueller.....New York.
 Lunkenheimer Co.....Cincinnati.
 New York Belting & Packing Co.....New York.
 Northwestern Steam Boiler & Mfg. Co.....Duluth, Minn.

ENGINEERS, MARINE, MECHANICAL, CONSULTING.

Hynd, Alexander.....Cleveland.
 Hunt, Robt. W. & Co.....Chicago.
 Kidd, Joseph.....Duluth, Minn.
 Lovejoy, H. O.....Buffalo.
 Mosher, Chas. D.....New York.
 Nacey, James.....Cleveland.
 Rice, Henry.....Buffalo.
 Roelker, H. B.....New York.
 Wood, W. J.....Chicago.

FANS FOR VENTILATION, EXHAUST, ETC.

Sturtevant, B. F. Co.....Hyde Park, Mass.

FEED WATER PURIFIERS AND HEATERS.

Greacen-Derby Engineering Co.....Perth Amboy, N. J.
 Ross Valve Co.....Troy, N. Y.

FIRE EXTINGUISHERS.

Safety Fire Extinguisher Co.....New York.

FIXTURES FOR LAMPS, OIL OR ELECTRIC.

General Electric Co.....Schenectady, N. Y.

FORGES.

Sturtevant, B. F. Co.....Boston.
 Sutton Co., C. E.....Toledo, O.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.

Cleveland City Forge & Iron Co.....Cleveland.
 Fore River Shipbuilding Co.....Quincy, Mass.
 Macbeth Iron Co.....Cleveland.

FLUE WELDING.

Fix's, S. Sons.....Cleveland.

FUEL ECONOMIZERS.

Sturtevant Co., B. F.....Hyde Park, Mass.

FUELING COMPANIES AND COAL DEALERS.

Hanna, M. A. & Co.....Cleveland.
 Ironville Dock & Coal Co.....Toledo, O.
 Parker Bros. Co., Ltd.....Detroit.
 Pickands, Mather & Co.....Cleveland.
 Pittsburgh Coal Co.....Cleveland.
 Smith, Stanley B., & Co.....Detroit.
 Smith Coal & Dock Co., Stanley B. Toledo, O.

FUELING PLANTS, BUILDERS OF

Link Belt Machinery Co.....Chicago.

FURNACES FOR BOILERS.

Continental Iron Works.....New York.

GAS BUOYS.

Safety Car Heating & Lighting Co.....New York.

GAS AND GASOLINE ENGINES.

Chase Machine Co.....Cleveland.
 Georgian Bay Engineering Works.....Midland, Ont.

GAUGES, STEAM AND VACUUM.

Ashton Valve Co.....Boston.
 Lunkenheimer Co.....Cincinnati.

GAUGES, WATER.

Bonner Co., Wm. T.....Boston.
 Lunkenheimer Co.....Cincinnati, O.

GRAPHITE.

Dixon Crucible Co., Joseph.....Jersey City, N. J.

GREASE EXTRACTORS.

Greacen-Derby Engineering Co.....Perth Amboy, N. J.

HAMMERS, STEAM.

Chase Machine Co.....Cleveland.

HEATING APPARATUS.

Sturtevant, B. F. Co.....Hyde Park, Mass.
 Sutton Co., C. E.....Toledo, O.

HOISTS FOR CARGO, ETC.

American Ship Building Co.....Cleveland.
 Brown Hoisting Machinery Co. (Inc.).....Cleveland.
 Chase Machine Co.....Cleveland.
 General Electric Co.....New York.
 Georgian Bay Engineering Works.....Midland, Ont.
 Hyde Windlass Co.....Bath, Me.
 McMyler Mfg. Co.....Cleveland.
 Marine Iron Co.....Bay City.
 Mietz, Aug.....New York.

HOLLOW SHAFTINGS, IRON OR STEEL.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

HOLLOW STAYBOLT IRON.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

HYDRAULIC DREDGES.

Great Lakes Engineering Works.....Detroit.

HYDRAULIC TOOLS.

Watson-Stillman Co., The.....New York.

ICE MACHINERY.

Great Lakes Engineering Works.....Detroit.
 Roelker, H. B.....New York.

INDICATORS FOR STEAM ENGINES.

Ashton Valve Co.....Boston.

INJECTORS.

American Injector Co.....Detroit.
 Crane Co.....Chicago.
 Jenkins Bros.....New York.
 Lunkenheimer Co.....Cincinnati.
 Penberthy Injector Co.....Detroit, Mich.

INSURANCE, MARINE.

Elphicke, C. W. & Co.....Chicago.
 Fleming & Co., E. J.....Chicago.
 Gilchrist & Co., C. F.....Cleveland.
 Hawgood & Co., W. A.....Cleveland.
 Helm & Co., D. T.....Duluth.
 Hutchinson & Co.....Cleveland.
 McCarthy, T. R.....Montreal.
 McCurdy, Geo. L.....Chicago.
 Mitchell & Co.....Cleveland.
 Parker Bros. Co., Ltd.....Detroit.
 Peck, Chas. E. & W. F.....New York & Chicago.
 Prindiville & Co.....Chicago.
 Richardson, W. C.....Cleveland.
 Sullivan, D. & Co.....Chicago.

IRON CASTINGS.

Sutton Co., C. E.....Toledo, O.

IRON ORE AND PIG IRON.

Bourne-Fuller Co.....Cleveland, O.
 Hanna, M. A. & Co.....Cleveland.
 Pickands, Mather & Co.....Cleveland.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.

Georgian Bay Engineering Works.....Midland, Ont.
 Marine Iron Works.....Chicago.
 Truscott Boat Mfg. Co.....St. Joseph, Mich.
 Willard, Chas. F.....Winthrop Harbor, Ill.

LIFE PRESERVERS, LIFE BOATS, BUOYS.

Armstrong, Cork Co.....Pittsburg.
 Drein, Thos. & Son.....Wilmington, Del.
 Gaynor, T. F.....New York.
 Kahnweiler's Sons, D.....New York.
 National Cork Co.....Brooklyn.

LIGHTS, SIDE AND SIGNAL.

Russell & Watson.....Buffalo.

LOGS.

Nicholson Ship Log Co.....Cleveland.
 Walker & Sons, Thomas.....Birmingham, Eng.
 Also Ship Chandlers.

LUBRICATING GRAPHITE.

Dixon Crucible Co., Joseph.....Jersey City, N. J.

LUBRICATORS.

Crane Co.....Chicago.
 Lunkenheimer Co.....Cincinnati.

LUMBER.

Martin-Barriss Co.....Cleveland.
 Rayner, J.....Chicago.

MACHINISTS.

Chase Machine Co.....Cleveland.
 Hickler Bros.....Sault Ste. Marie, Mich.
 Lockwood Mfg. Co.....East Boston, Mass.

MACHINE TOOLS (WOOD WORKING).

Atlantic Works, Inc.....Philadelphia.

MARINE RAILWAYS.

Hickler Bros.....Sault Ste. Marie, Mich.

MARINE RAILWAYS, BUILDERS OF.

Crandall & Son, H. I.....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
 Detroit Ship Building Co.....Detroit.
 Great Lakes Engineering Works.....Detroit.
 Sturtevant, B. F. Co.....Hyde Park, Mass.

METALLIC PACKING.

Katzenstein, L. & Co.....New York.

MOTORS, GENERATORS—ELECTRIC.

Fisher Electrical Works.....Detroit.
 General Electric Co.....Schenectady, N. Y.
 Sturtevant, B. F. Co.....Hyde Park, Mass.

NAUTICAL INSTRUMENTS.

Ritchie, E. S., & Sons.....Brookline, Mass.

NAVAL ARCHITECTS.

Hynd, Alexander.....Cleveland.
 Kidd, Joseph.....Duluth, Minn.
 Lovejoy, H. O.....Buffalo.
 Mosher, Chas. D.....New York.
 Nacey, James.....Cleveland.
 Rice, Henry.....Buffalo.
 Wood, W. J.....Chicago.

OAKUM.

Stratford, Oakum Co.....Jersey City, N. J.

OIL ENGINES.

Mietz, Aug.....New York.

OILS AND LUBRICANTS.

Dixon Crucible Co., Joseph.....Jersey City, N. J.
 Standard Oil Co.....Cleveland.

PACKING.

Crane Co.....Chicago.
 Jenkins Bros.....New York.
 Katzenstein, L. & Co.....New York.

PAINTS.

Baker, Howard H. & Co.....Buffalo.
 Upson-Walton Co.....Cleveland.

PATTERN SHOP MACHINERY.

Atlantic Works, Inc.....Philadelphia.

Books on Naval Architecture, Ship Yard Practice, Seamanship, Etc.

AMERICAN PRACTICAL NAVIGATOR —Nathaniel Bowditch. 1903 edition \$3 25	NAVAL ARCHITECTS AND SHIPBUILDERS' POCKET BOOK —Clement Mackrow. Formulæ, rules and tables, and marine engineers' and surveyors' Handy Book of Reference. Eighth edition, revised and enlarged 5 00
CLASS BOOK OF NAVAL ARCHITECTURE —Practical—Laying Off—Theoretical—By W. J. Lovett..... 2 50	NAVAL CONSTRUCTOR —By Geo. Simpson. A book on Ship Design for Students, Ship Builders and Owners, Marine Superintendents, Engineers and Draughtsmen..... 5 00
COURSE CORRECTOR —A great aid to those who use true and magnetic courses, and apply deviation, etc.—Capt. R. M. Pugsley .. 50	NAVAL DICTIONARY —Howard Patterson..... 1 00
COURSE PROTRACTOR —Capt. R. M. Pugsley 1 00	NAVIGATION SIMPLIFIED —C. E. McArthur. Containing all problems required for U. S. Local Inspector's Examination of Masters and Mates of seagoing vessels 1 00
CURRENT-COURSE PROJECTOR —Use this instrument and know exactly how much to allow for a current—Capt. R. M. Pugsley .. 3 00	PILOT AND HOW TO DO THE WORK —A small pocket guide to the U. S. Local Inspectors examination of masters and mates of ocean-going steam and sailing ships..... 1 00
DATA BOOK —Naval architects and engineers' data book. By T. H. Watson. A reliable and simple means of recording valuable data, etc., of vessels and engines. Size of book, 8¼ in. by 5 in., cloth 1 50	POCKET BOOK OF MARINE ENGINEERING, RULES AND TABLES —Seaton and Rounthwaite. For marine engineers, naval architects, superintendents and others engaged in construction of marine machinery 3 00
ELECTROMAGNETIC PHENOMENA AND THE DEVIATIONS OF THE COMPASS —Com. T. A. Lyons 6 00	PRACTICAL COMPASS ADJUSTMENT on Iron, Composite and Wooden Vessels. Illustrated.—Capt. W. J. Smith 2 00
ELEMENTARY NAVAL TACTICS —Bainbridge-Hoff..... 2 00	PRACTICAL INFORMATION ON THE DEVIATION OF THE COMPASS , for the use of Masters and Mates of Iron Ships—J. T. Towson 2 00
ELEMENTARY SEAMANSHIP —By Barker. New and enlarged edition 3 50	PRACTICAL SEAMANSHIP FOR USE IN THE MERCHANT SERVICE : Including all ordinary subjects; also Steam Seamanship. Wreck Lifting, Avoiding Collision, Wire Splicing, Displacement and everything necessary to be known by seamen of the present day. Second edition, illustrated.—John Todd and W. B. Whall 3 40
ELEMENTS OF NAVIGATION —Henderson 1 00	PRACTICAL SHIPBUILDING : A treatise on the structural design and building of modern steel vessels—By A. Campbell Holmes—Two volumes..... 16 00
GUIDE to the U. S. Local Inspectors examination of masters and mates of ocean-going steam and sailing ships, with complete instructions and information for those who wish to learn navigation and save the expense of attending school by preparing themselves for the examination—Capt. R. M. Pugsley 2 00	RESISTANCE AND PROPULSION OF SHIPS —Durand..... 5 00
HAND BOOK OF ADMIRALTY LAW —Robt. M. Hughes.... 3 75	SAILS AND SAILMAKING 1 25
HINTS ON LEGAL DUTIES OF SHIPMASTERS —B. W. Ginsburg 1 75	SCOTT'S COAST PILOT —Geo. Scott..... 1 50
HOW TO BUILD A LAUNCH FROM PLANS —, with general instructions for the care and running of gas engines. Chas. G. Davis 1 50	SCREW PROPELLER COMPUTER —McDermott..... 5 00
ILLUSTRATED NAUTICAL ENCYCLOPEDIA —Howard Patterson 3 00	SCREW PROPELLERS AND MARINE PROPULSION —I. McKim Chase 3 00
INDICATOR PRACTICE —Hemenway..... 2 00	SELF-INSTRUCTOR IN NAVIGATION AND PRACTICAL GUIDE to the examinations of the U. S. Government Inspectors for masters and mates of ocean-going steamships and sailing vessels—Capt. W. J. Smith. Second edition, revised and enlarged. Cloth bound 2 00
INTERNATIONAL SIGNAL CODE —Bureau of Navigation. New edition 2 00	SELF-INSTRUCTION IN THE PRACTICE AND THEORY OF NAVIGATION —Earl of Dunraven. Two volumes..... 7 00
KNOW YOUR OWN SHIP —Thos. Walton 2 50	SHIP BUILDING —Tables for constructing ship's lines. Second edition. Archibald Hogg 2 00
MANUAL OF ALGEBRA —R. C. Buck. For the use, more especially, of young sailors and officers in the merchant navy; numerous examples and exercises 1 50	SIMPLE ELEMENTS OF NAVIGATION —Young. New second edition 2 00
MARINE INSURANCE —W. Gow 1 50	SMALL YACHT CONSTRUCTION AND RIGGING —Linton Hope 2 00
MARINE PROPELLERS —Barnaby..... 4 50	STABILITY OF SHIPS —Sir E. J. Reed 3 40
MARINER'S COMPASS IN AN IRON SHIP : How to keep it efficient and use it intelligently—J. W. Dixon..... 1 00	STEEL SHIPS : Their Construction and Maintenance. A manual for ship builders, ship superintendents, students and marine engineers—Thos. Walton 5 50
MODEL ENGINES AND SMALL BOATS —N. M. Hopkins. New methods of engine and boiler making; ship design and construction; fifty illustrations 1 25	TAIT'S SEAMANSHIP —Jas. Tait 75
MODERN SEAMANSHIP —Lieut. Com. Austin M. Knight, U. S. N. Adopted as the text book of the United States Naval Academy 6 00	TEXT BOOK OF NAVAL ARCHITECTURE —J. J. Welch 1 50
MODERN NAVIGATION : A text book of navigation and nautical astronomy suitable for the examinations of the royal navy and board of education—Wm. A. Hall..... 4 00	TEXT BOOK OF SEAMANSHIP —Com. S. B. Luce. U. S. N. Equipping and handling of vessels under sail or steam.... 10 00
MODERN PRACTICE OF SHIP BUILDING IN IRON AND STEEL —Samuel J. P. Thearle. Two volumes. Second edition, revised and enlarged 5 25	THEORETICAL NAVAL ARCHITECTURE : A treatise on the calculation involved in naval design—Samuel J. P. Thearle. In two volumes 2 50
NAVAL ARCHITECTURE —W. J. Lovett. Practical, Laying-Off, Theoretical. (Just out, 1905.)..... 2 50	THEORETICAL NAVAL ARCHITECTURE —E. L. Attwood. Text book; 114 diagrams 2 50
NAVAL ARCHITECTURE —Cecil H. Peabody. Just published... 7 50	"WRINKLES" IN PRACTICAL NAVIGATION . Ninth edition, revised. S. T. S. Lecky 2 40
NAVAL ARCHITECTURE : A manual on laying off iron and steel vessels—Thos. H. Watson. Valuable for naval architects as well as beginners in ship yards..... 5 00	YACHT ETIQUETTE —Capt. Howard Patterson 1 00
NAVAL ARCHITECTURE —Sir W. H. White. New edition. 760 pages 9 00	

Sent to any address, carriage prepaid, at prices named. There is no book on Navigation, Marine Engineering, Ship Building, or the allied industries, that is not either published or for sale by the

MARINE REVIEW,

CLEVELAND, O.

Buyers' Directory of the Marine Trade.—Continued.

PILE DRIVING AND SUBMARINE WORK.

Buffalo Dredging Co.....Buffalo.
 Dunbar & Sullivan Dredging Co.....Buffalo.
 Fitz-Simons & Connell Co.....Chicago.
 Great Lakes Dredge & Dock Co.....Chicago.
 Hickler Bros.....Sault Ste. Marie, Mich.
 Lake Superior Contracting & Dredging Co.....Duluth, Minn.
 Parker Bros. Co., Ltd.....Detroit.
 Smith Co., L. P. & J. A.....Cleveland.
 Starke Dredge & Dock Co., C. H.....Milwaukee.
 Sullivan, M.....Detroit

PIPE, WROUGHT IRON.

Bourne-Fuller Co.....Cleveland, O.
 Crane Co.....Chicago.
 Macbeth Iron Co.....Cleveland.
 Reading Iron Co.....Reading, Pa.

PLANING MILL MACHINERY.

Atlantic Works, Inc.....Philadelphia.

PLATES—SHIP, STRUCTURAL, ETC.
 Bourne-Fuller Co.....Cleveland, O.
 Otis Steel Co.....Cleveland.

PRESSURE REGULATORS.

Kieley & Mueller.....New York.
 Ross Valve Co.....Troy, N. Y.

PROPELLER WHEELS.

American Ship Building Co.....Cleveland.
 Atlantic Works.....East Boston, Mass.
 Cramp, Wm. & Sons.....Philadelphia.
 Detroit Ship Building Co.....Detroit.
 Fore River Shipbuilding Co.....Quincy, Mass.
 Great Lakes Engineering Works.....Detroit.
 Hyde Windlass Co.....Bath, Me.
 Lockwood Mfg. Co.....East Boston, Mass.
 Marine Iron Works.....Chicago.
 Milwaukee Dry Dock Co.....Milwaukee.
 Newport News Ship Building Co.....Newport News, Va.
 Roelker, H. B.....New York.
 Sheriffs Mfg. Co.....Milwaukee.
 Superior Ship Building Co.....Superior, Wis.
 Thropp & Sons Co., J. E.....Trenton, N. J.
 Trout, H. G.....Buffalo.

PROJECTORS, ELECTRIC.

General Electric Co.....Schenectady, N. Y.

PUMPS FOR VARIOUS PURPOSES.

Blake, Geo. F., Mfg. Co.....New York.
 Great Lakes Engineering Works.....Detroit.
 Marine Iron Works.....Chicago.
 Kingsford Foundry & Machine Works.....Oswego, N. Y.

PUNCHES AND SHEARS.

Sutton Co., C. E.....Toledo, O.

RANGES.

Stamford Foundry Co.....Stamford, Conn.

REFRIGERATING APPARATUS.

Great Lakes Engineering Works.....Detroit.
 Roelker, H. B.....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.

Great Lakes Register.....Cleveland.

REPAIRS—ENGINE AND BOILER.

(See also Boiler Manufacturers and Engine Builders.)
 Georgian Bay Engineering Works.....Midland, Ont.

RIVETS, STEEL FOR SHIPS AND BOILERS.

Bourne-Fuller Co.....Cleveland, O.

SAFETY VALVES.

Ashton Valve Co.....Boston.
 Crane Co.....Chicago.
 Lunkenheimer Co.....Cincinnati.

SAIL MAKERS.

Baker, Howard H. & Co.....Buffalo.
 Upson-Walton Co.....Cleveland.

SALVAGE COMPANIES.

See Wrecking Companies.

SEARCH LIGHTS.

General Electric Co.....Schenectady, N. Y.

SHAFTING, HOLLOW.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

SHEARS.

See Punches, and Shears.

SHIP AND BOILER PLATES AND SHAPES.

Bourne-Fuller Co.....Cleveland, O.
 Otis Steel Co.....Cleveland.

SHIP BUILDERS.

American Ship Building Co.....Cleveland.
 Atlantic Works.....East Boston, Mass.
 Buffalo Dry Dock Co.....Buffalo.
 Cramp, Wm. & Sons.....Philadelphia.
 Craig Ship Building Co.....Toledo, O.
 Chicago Ship Building Co.....Chicago.
 Detroit Ship Building Co.....Detroit.
 Fore River Shipbuilding Co.....Quincy, Mass.
 Great Lakes Engineering Works.....Detroit.
 Lockwood Mfg. Co.....East Boston, Mass.
 Maryland Steel Co.....Sparrows Point, Md.
 Milwaukee Dry Dock Co.....Milwaukee.
 Newport News Ship Building Co.....Newport News, Va.
 New York Shipbuilding Co.....Camden, N. J.
 Roach's Ship Yard.....Chester, Pa.
 Shipowner's Dry Dock Co.....Chicago.
 Smith & Son, Abram.....Algonac, Mich.

SHIP CHANDLERS.

Baker, Howard H. & Co.....Buffalo.
 Marine Mfg. & Supply Co.....New York.
 Upson-Walton Co.....Cleveland.

SHIP DESIGNERS.

Kidd, Joseph.....Duluth.
 Rice & Lovejoy.....Buffalo.
 Steel, Nacey & Hynd.....Cleveland.
 Wood, W. J.....Chicago.

SHIP LANTERNS AND LAMPS.

Russell & Watson.....Buffalo.

SHIPMATE RANGES.

Stamford Foundry Co.....Stamford, Conn.

SHIP TIMBER.

Martin-Barriss Co.....Cleveland.
 Rayner, J.....Chicago.

SMOOTH-ON COMPOUND, FOR REPAIRS.

Smooth-On Mfg. Co.....Jersey City, N. J.

STAYBOLT IRON OR STEEL BARS, HOLLOW OR SOLID.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

STEAM VESSELS FOR SALE.

Gilchrist & Co., C. P.....Cleveland.
 Holmes, Samuel.....New York.
 Lester, S. S.....Quebec, Can.
 McCarthy, T. R.....Montreal, Can.

STEAMSHIP LINES, PASS, AND FREIGHT.

American Line.....New York.
 Anchor Line.....Buffalo.
 Boston Steamship Co.....Boston.
 Cleveland & Buffalo Transit Co.....Cleveland.
 International Mercantile Marine Co.....Philadelphia.
 Mallory Line.....New York.
 Merchants' Montreal Line.....Montreal.
 New York & Cuba Mail S. S. Co.....New York.
 Red Star Line.....New York.
 United Fruit Co.....Boston.

STEEL CASTINGS.

Otis Steel Co.....Cleveland.
 Sutton Co., C. E.....Toledo, O.

STEERING APPARATUS.

American Ship Building Co.....Cleveland.
 Chase Machine Co.....Cleveland.
 Detroit Ship Building Co.....Detroit.
 Hyde Windlass Co.....Bath, Me.
 Marine Mfg. & Supply Co.....New York.
 Moulton Steering Engine Co.....New York.
 Sheriffs Mfg. Co.....Milwaukee.

SUBMARINE DIVING APPARATUS.

Morse & Son, A. J.....Boston.
 Schrader's Son, Inc., A.....New York.

SURVEYORS, MARINE.

Gaskin, Edward.....Buffalo.
 Hynd, Alexander.....Cleveland.
 Lovejoy, H. O.....Buffalo.
 Matteson & Drake.....Philadelphia.
 Parker Bros. Co., Ltd.....Detroit.
 Nacey, James.....Cleveland.
 Rice, Henry.....Buffalo.
 Steel, Adam.....Cleveland.
 Wood, W. J.....Chicago.

TESTS OF MATERIALS.

Hunt, Robert W. & Co.....Chicago.
 Lunkenheimer Co.....Cincinnati, O.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.

Watson-Stillman Co.....New York.

TOOLS, WOOD WORKING.

Atlantic Works, Inc.....Philadelphia.

TOWING MACHINES.

American Ship Windlass Co., Providence, R. I.
 Chase Machine Co.....Cleveland.

TOWING COMPANIES.

Donnelly Salvage & Wrecking Co.....Kingston, Ont.
 Great Lakes Towing Co.....Cleveland.

TRAPS, STEAM.

Kieley & Mueller.....New York.
 Sturtevant Co., B. F.....Hyde Park, Mass.

TRUCKS.

Boston & Lockport Block Co.....Boston.

TUBING, SEAMLESS.

Shelby Steel Tube Co.....Pittsburg, Pa.

VALVES, STEAM SPECIALTIES, ETC.

Ashton Valve Co.....Boston.
 Crane Co.....Chicago.
 Jenkins Bros.....New York.
 Kieley & Mueller.....New York.
 Lunkenheimer Co.....Cincinnati.
 Ross Valve Co.....Troy, N. Y.

VALVES FOR WATER AND GAS.

Lunkenheimer Co.....Cincinnati.
 Ross Valve Co.....Troy, N. Y.

VARNISHES.

Detroit Varnish Co.....Detroit.
 Detroit White Lead Works.....Detroit.
 Also Ship Chandlers.

VENTILATING APPARATUS FOR SHIPS.

Sturtevant, B. F. Co.....Hyde Park, Mass.
 Sutton Co., C. E.....Toledo, O.

VESSEL AND FREIGHT AGENTS.

Boland, John J.....Buffalo.
 Brown & Co.....Buffalo.
 Elphicke, C. W. & Co.....Chicago.
 Fleming & Co., E. J.....Chicago.
 Gilchrist & Co., C. P.....Cleveland.
 Hall, John B.....Buffalo.
 Helm & Co., D. T.....Duluth.
 Hawgood & Co., W. A.....Cleveland.
 Holmes, Samuel.....New York.
 Hutchinson & Co.....Cleveland.
 Lester, S. S.....Quebec, Can.
 McCarthy, T. R.....Montreal.
 Mitchell & Co.....Cleveland.
 Parker Bros. Co., Ltd.....Detroit.
 Prindiville & Co.....Chicago.
 Richardson, W. C.....Cleveland.
 Sullivan, D. & Co.....Chicago.

WATER GAUGES.

Bonner Co., Wm. T.....Boston.
 Lunkenheimer Co.....Cincinnati, O.

WATERTIGHT BULKHEAD DOORS.

"Long Arm" System Co.....Cleveland.

WHISTLES, STEAM.

Ashton Valve Co.....Boston.
 Lunkenheimer Co.....Cincinnati.

WILFORD'S WATERPROOF CLOTH.

Bunker, E. A.....New York.

WIRE ROPE AND WIRE ROPE FITTINGS.

Baker, H. H. & Co.....Buffalo.
 DeGrauw, Aymar & Co.....New York.
 Upson-Walton Co.....Cleveland.

WINDLASSES.

American Ship Windlass Co., Providence, R. I.
 American Ship Building Co.....Cleveland.
 Hyde Windlass Co.....Bath, Me.
 Marine Mfg. & Supply Co.....New York.

WINCHES.

American Ship Windlass Co., Providence, R. I.
 Georgian Bay Engineering Works.....Midland, Ont.
 Hyde Windlass Co.....Bath, Me.

WOOD WORKING MACHINERY.

Atlantic Works, Inc.....Philadelphia.

WOODS, FOREIGN.

Rayner, J.....Chicago.

WRECKING AND SALVAGE COMPANIES.

Donnelly Salvage & Wrecking Co.....Kingston, Ont.
 Great Lakes Towing Co.....Cleveland.
 Parker Bros. Co., Ltd.....Detroit.

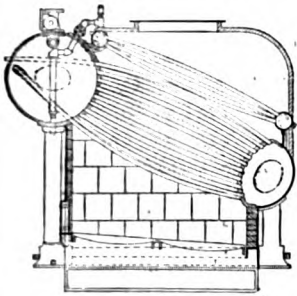
YACHT AND BOAT BUILDERS.

Drein, Thos. & Son.....Wilmington, Del.
 Georgian Bay Engineering Works.....Midland, Ont.
 Truscott Boat Mfg. Co.....St. Joseph, Mich.

YAWLS.

Drein, Thos. & Son.....Wilmington, Del.

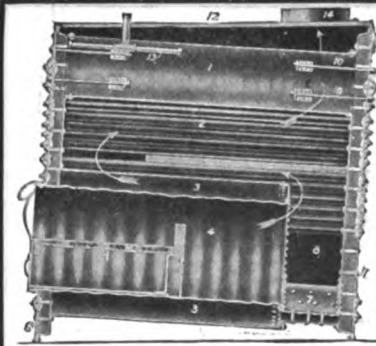
THE MOSHER PATENT WATERTUBE BOILER



Simplest, lightest most compact boiler made. Most accessible for cleaning and repair. Five vertical rows or as many as 45 tubes may be cleaned or withdrawn by removing the cover from a single hand hole. Largest grate surface on a given floor space. No joints in the fire. All joints expanded. Greater steam room and water capacity than any other boiler. Built in sizes up to 2000 H. P. Mosher Boilers have been supplied for eleven torpedo boats and the monitor Florida of the U. S. Navy, amounting to over 26,000 H. P., six torpedo boats for the Russian Navy two gun boats for the Mexican government, one cruiser and one torpedo boat for the Brazilian government; the steam yachts Arrow, Elide, Feiseen, Wauneta, Presto, and numerous other yachts and vessels.

SEND FOR DESCRIPTIVE CATALOGUE.

MOSHER WATERTUBE BOILER CO., No. 1 Broadway, N. Y.



Detroit Scotch Water Tube Boiler

Internally Fired.

Scotch and Water Tube types combined, eliminating all objections.

Half the weight of ordinary Scotch boilers.

Standard corrugated furnaces.

Patent applied for.

Investigate before buying any other.

EAST END BOILER WORKS
Detroit, Mich.

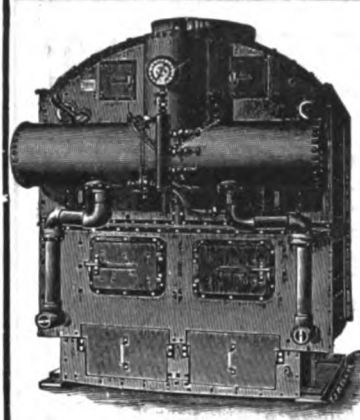


Taylor Water Tube Boiler Co.

Vertical Tubes, sectional, large steam space and liberating area. Fire box, combustion chamber, and course for the furnace gases similar to the Scotch Marine. Free circulation type.

Send for full description.

322 Franklin St.
DETROIT, MICH.



250 STEAM VESSELS

Now Equipped With

ALMY'S PATENT

SECTIONAL

Water Tube Boilers

Bear Evidence of Their

Excellent Qualities

Almy Water-Tube Boiler Co.

PROVIDENCE, R. I.

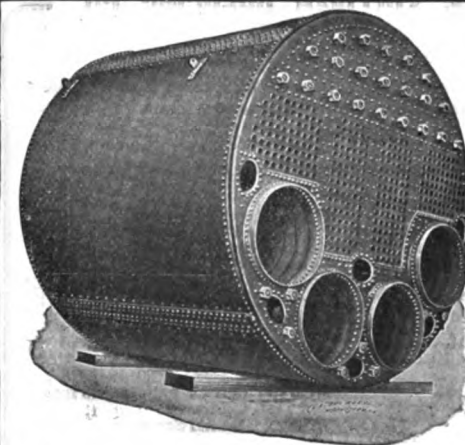
John E. Thropp & Sons Co.

TRENTON, N. J.



Builders of Single, Compound, Triple - Expansion and Direct Connected Engines.

Boyer Sectional Water Tube boilers and Machinery complete for light draft Passenger Boats, Yachts, Tugs, Etc.



MARINE BOILERS

OF ALL TYPES

KINGSFORD FOUNDRY & MACHINE WORKS,

Oswego, N. Y.

LATEST PATENT ANCHOR

THE NATIONAL

APPROVED BY LLOYDS.

Manufactured by

L. M. BOWERS & CO.,

Binghamton, N. Y.

Catalogue on Application.



The National and International

ANCHORS.

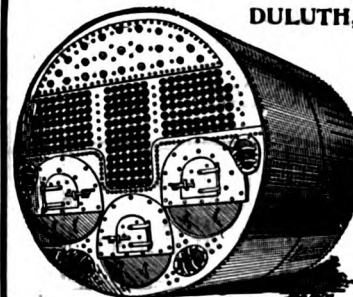
Furnished to the Lake Trade by

The Upson-Walton Co.,

CLEVELAND, O.

Northwestern Steam Boiler & Mfg. Co.

DULUTH, MINN.



Manufacturers of

BOILERS, ENGINES AND MACHINERY

Special facilities for Marine Work. Repairs promptly attended to Night or Day.

We carry a complete line of Marine and Engineers' Supplies.

TELEPHONES: OFFICE AND WORKS, 615.
RESIDENCE CALLS: M. A. PVAJ, Pres. and Gen'l Mgr., 776-R;
J. H. OPPERMAN, Secretary, 579-R; E. KRIZ, Superintendent, 557-M.

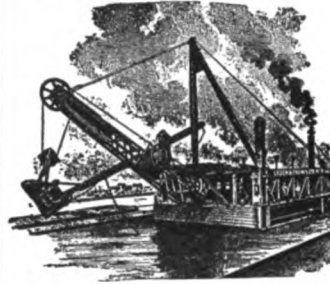
G. H. Breymann & Bro's

CONTRACTORS FOR PUBLIC WORKS

Dredging, Dock Building, Etc.

5, 6 AND 7 MARINE BUILDING
TOLEDO, OHIO.

GREAT LAKES DREDGE & DOCK CO.



OWNS AND OPERATES THE PLANTS
OF THE FORMER COMPANIES:

Lydon & Drews Co.
Hausler & Lutz Co.
Green's Dredging Co.
Chicago Star Con. & D. Co.
McMahon & Montgomery Co.
Chicago Dredging & Dock Co.
Griffith, McDermott & Watt
Dredging Co.
Duluth Dredge & Dock Co.

Contractors for

RIVER AND HARBOR IMPROVEMENTS.

Main Office: 1319-1322 Chamber of Commerce

CHICAGO

BUFFALO DREDGING CO.

GENERAL CONTRACTORS ON SUBMARINE WORK

Office D. S. MORGAN BLDG.
BUFFALO, N. Y.

HICKLER BROTHERS

MARINE RAILWAY

Capacity, 1,000 tons.

Draft, 7 1/2 ft. forward, 13 1/2 ft. aft.

Length on keel blocks, 180 ft.; over all, 190 ft.

Machine Shop, Foundry and Steam Forge.

Dredges, Drill Boats and Derrick Scows.

SAULT STE. MARIE, - MICH.

DUNBAR & SULLIVAN DREDGING CO.

BUFFALO, N. Y.

Will contract to remove ROCK or EARTH on the Great Lakes to 40 ft. depth.
To remove ROCK on Atlantic Coast to 40 ft. depth.

THAT'S ALL.

We SOMETIMES rent plant to responsible parties at OUR terms.

Dredges	Scows
Brian Boru, Steel.	Monroe Doctrine, 600 yds., Steel.
Tipperary Boy, Steel.	Protective Policy, 500 yds., Steel.
Erin Go Braugh.	Reciprocity, 600 yds., Steel.
Drill Boats	Cuba Libre, 250 yds., Steel.
Geo. A. Howells and	Gold Standard, 250 yds., Steel.
another, both Steel.	No. 5, 600
Tugs	No. 6, 600
Shaughraun, Steel	No. 7, 600
Phil. Sheridan, Steel	No. 8, 600
Spalpeen, Steel	
Paddy Miles, Steel	4,600
Shaun Rhue, Steel	McMyler derrick handling 10 tons
Derrick	at 75 ft. radius.
Faugh a Ballaugh	Small Scows

Lake Superior Contracting & Dredging Company

GENERAL CONTRACTORS for PUBLIC and PRIVATE WORK RIVER AND HARBOR IMPROVEMENTS

Two 20-inch Hydraulic Dredges specially equipped
for handling Clay, Gravel and all kinds of dredgeable
material. Filling and reclaiming lands a specialty.

General Office, Wolvin Building

DULUTH, MINN

The Fitz-Simons & Connell Co.

CONTRACTORS FOR PUBLIC WORKS

DREDGING
DOCKS
PILE DRIVING
BREAKWATERS

TUNNELS
CANALS
BRIDGES
FOUNDATIONS

Offices: 1010-1014 Tacoma Building, Chicago.

THE L. P. & J. A. SMITH COMPANY

CONTRACTORS FOR PUBLIC WORKS

Dredging	Dry Docks and	Bridges,
Harbor Work,	Pier Building,	Submarine
Pile Driving,	Railroads,	Foundations,
Breakwaters,	Canals,	Etc., Etc.

Offices: Williamson Bldg., CLEVELAND, O.

C. H. STARKE DREDGE & DOCK CO.,

Contractors for Public Works.

**DREDGING, PILE DRIVING,
AND
SUBMARINE PIPE LAYING.**

Canal Street, West of First Avenue,
Milwaukee, - - Wisconsin.

N. SULLIVAN,
DREDGING OF ALL KINDS.

**THE REMOVING OF DEEP
WATER EARTH AND ROCK
A SPECIALTY. - - -**

**53 Woodward Ave. Terrace,
DETROIT, - - - MICH.**

Steamboat Fuel at Ashtabula.

Large Supplies of Best Quality.



Fuel Scow with elevators and discharging spouts. Storage of 800 tons.
Discharges 250 tons an hour into steamers while unloading cargo.

M. A. Hanna & Co., Miners and Shippers,
Main Office, Perry-Payne Bldg., Cleveland.

Toledo Office, 429 Spitzer Bldg.
Cleveland Office, 610 Perry-Payne Bldg.

Fueling { Ironville Dock (Toledo Harbor)
Plants { Huron Dock (Huron Harbor)

**THE IRONVILLE DOCK & COAL
COMPANY**

BITUMINOUS COAL
For Steamboat Fuel and Cargo Shipment

CLEVELAND, OHIO.

610 Perry-Payne Building

Bell Phone Main 572

J. RAYNER

**MAHOGANY LUMBER
VENEERS
FOREIGN WOODS**

Foot E. Houston St.
NEW YORK CITY

Fulton & Morgan Sts.
CHICAGO

**CATALOGS
WANTED.**

We are requested to inform the INDUSTRIALS of all branches that our French contemporary, "LE MOIS SCIENTIFIQUE ET INDUSTRIEL" of 8 rue Nouvelle at PARIS, 9°, has established an Information Branch from which particulars on any question may be obtained.

It is of great interest for all manufacturers to send regularly their "Catalogues" to "Le Mois Scientifique et Industriel" from where they will be forwarded to every one interested in the line.

Do not delay to send them and note the address is

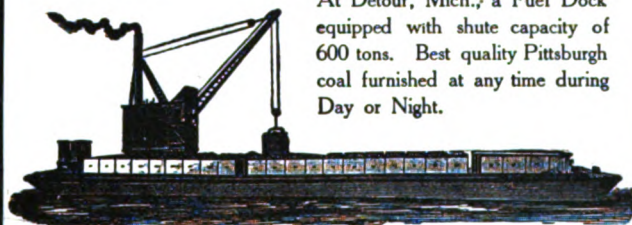
LE MOIS SCIENTIFIQUE ET INDUSTRIEL
8 rue Nouvelle at Paris--9°

Ask for a specimen notice free on application.

PICKANDS, MATHER & CO.

FUEL LIGHTERS at Buffalo, Erie, Ashtabula and Cleveland.

At Detour, Mich., a Fuel Dock equipped with chute capacity of 600 tons. Best quality Pittsburgh coal furnished at any time during Day or Night.



Western Reserve Building,

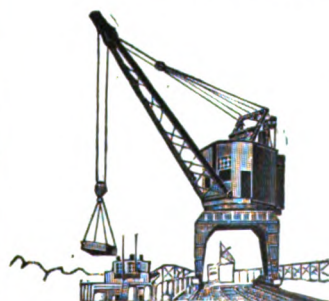
CLEVELAND, O.

McMyler Mfg. Co.

CLEVELAND, O., U. S. A.

Designers and Builders
of

**Hoisting and Conveying
Machinery,
Vessel Unloading
Machinery,
Revolving Cranes,
Car Dumpers,
Clam Shell Buckets,
Etc.**



Merchants Montreal Line

ST. LAWRENCE RIVER ROUTE
PASSENGER STEAMERS

CITY OF MONTREAL CUBA

Commencing June 15th, weekly service (Thursdays)
to the following points:

Toronto **Cornwall**
Kingston **Prescott**
Brockville **Montreal**

For rates and further information apply to

G. E. JAKES & CO., Mgrs.
Montreal,
Quebec.

W. J. FARASEY, Agent,
107-115 River St.,
Tel. M 2049 Cleveland, O.

**THE CLEVELAND & BUFFALO**

TRANSIT COMPANY

UNPARALLELED NIGHT SERVICE

The Twin Flyers of The Lakes

"CITY OF BUFFALO" "CITY OF ERIE"

Both together being, without doubt, in all respects the finest and fastest that are run in the interest of the traveling public in the United States.

TIME CARD.—DAILY INCLUDING SUNDAY. CENTRAL STANDARD TIME.

Leave CLEVELAND 8 p. m. Arrive BUFFALO 6:30 a. m.

" BUFFALO 8 p. m. " CLEVELAND 6:30 a. m.

Connections made at Buffalo for all Eastern and Canadian points;

at Cleveland for Toledo, Detroit and all points West and Southwest.

Tickets reading over L. S. & M. S. Ry. will be accepted

on this Company's Steamers without extra charge.

Special Low Rates Cleveland to Buffalo and Niagara Falls every

Saturday Night, also Buffalo to Cleveland. Ask Ticket Agents for

tickets via C. & B. Line. Send four cents for illustrated pamphlet.

W. F. HERMAN, G. P. A., Cleveland, O.

"Graphite as a Lubricant"

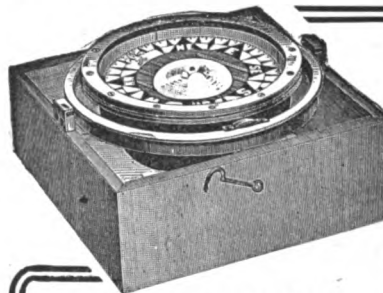
A practical treatise on
GRAPHITE LUBRICATION

52 pages. Illustrated
COPIES FREE

Mention Marine Review

JOSEPH DIXON CRUCIBLE CO.

JERSEY CITY, N. J.

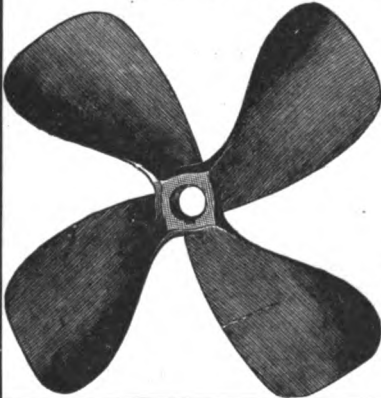
**Ritchie
Liquid
Compass**

The Standard Liquid
Compass used exclusive-
ly by the U. S. Navy for
over 35 years. Over
25,000 used in Merchant
Service.

Made in all sizes and styles, from 2 to 12 inches diameter of
card. All compasses made by us have our name printed below
the North point or prominently upon the card. None other are
genuine. Latest form with four or six needles, the best instru-
ment for iron ships. For sale by ship chandlers and nautical
instrument dealers. Catalogue free.

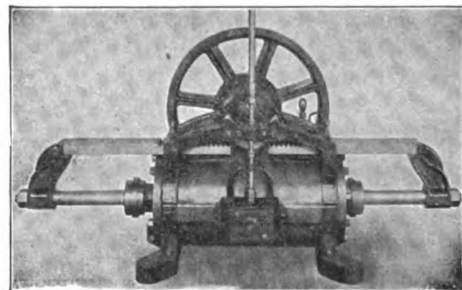
E. S. RITCHIE & SONS, Brookline, Mass., U. S. A.
MANUFACTURERS OF NAUTICAL AND PHYSICAL APPARATUS.

Thirty Years' Experience building



**Engines
and
Propeller
Wheels.**

H. G. TROUT,
King Iron Works,
226 Ohio St.,
BUFFALO, N. Y.

**A STEAM STEERER
DIRECT AND POSITIVE**

QUICK ACTING
Especially
adapted for
Steam Yachts
Ferryboats
Lake, Ocean
and Harbor
Tug Boats.

Send for Cata-
logue and
Particulars.

MOULTON STEERING ENGINE CO., 1691 BROADWAY
NEW YORK CITY.

ESTABLISHED, 1854.



**SHERIFFS
MANUFACTURING CO.**

Manufacturers of
PROPELLER
WHEELS
Marine Engines
and Repairs.

Milwaukee, Wis.

Phone S. 163

Aids to Navigation

are of vital importance to vessel interests.

SCHERZER ROLLING LIFT BRIDGES

aid navigation and meet with the approval of all
vessel interests, because of the wide and unobstruc-
ted channel provided for navigation, enabling vessels
to pass easily and rapidly through the draw.

The Scherzer Rolling Lift Bridge Co.

Main Offices: 1616 Monadnock Block,
CHICAGO, U. S. A.

WARD LINETHE NEW YORK & CUBA MAIL
STEAMSHIP CO.

POPULAR ROUTE TO

CUBA, NASSAU, MEXICO

FINEST AND LARGEST STEAMSHIPS SAILING
FROM NEW YORK TO OTHER THAN EUROPEAN
PORTS. HOLDERS OF THE RECORD BETWEEN
HAVANA AND NEW YORK -- 1,240 MILES IN 61
HOURS.

FOUR SAILINGS EACH WEEK BETWEEN
NEW YORK and HAVANA.WEEKLY SERVICE TO GUANTANAMO, SANTIAGO, MANZANILLO
AND CIENFUEGOS, CUBA, PROGRESO, VERA CRUZ
AND TAMPICO, MEXICO.

SEMI-MONTHLY SAILINGS TO

Nassau, N. P. Bahamas.

LOW RATES OF FREIGHT AND PASSAGE.

SEND FOR OUR SCHEDULES, RATES AND DESCRIPTIVE MATTER.

James E. Ward & Co.

GENERAL AGENTS

90 Wall Street, NEW YORK.**AMERICAN LINE**PLYMOUTH
CHERBOURG
SOUTHAMPTON

Sailing From New York Every Saturday at 9:30 a. m.

St. Louis
(11,629 tons)
New York
(10,798 tons)

St. Paul
(11,629 tons)
Philadelphia
(10,786 tons)
Special Express Train from Plymouth and Southampton
to London and between Cherbourg and Paris.**RED STAR LINE**NEW YORK
ANTWERP
LONDON
PARISCALLING AT DOVER FOR LONDON AND PARIS.
Sailing Every Saturday at 10:30 a. m.
Finland
(12,760 tons)

Kronland
(12,760 tons)

Vaderland
(12,017 tons)

Zeeland
(11,905 tons)
One of the Shortest Routes to LONDON, PARIS, BELGIUM, HOL-
LAND, GERMANY, THE RHINE, SWITZERLAND and ITALY.**9 Broadway, New York.**

Broad and Sansom Sts., Philadelphia.
India Building, 84 State Street, Boston.
1306 F St., N. W., Washington, D. C.
219 St. Charles St., New Orleans
90-96 Dearborn St., Chicago.
Century Building St. Louis.
Guaranty Building, S. Minneapolis.
21 Post St., San Francisco.
875 Robert St., St. Paul.
41 King St., East Toronto.
17 St. Sacramento St., Montreal.

PIERS: 14 & 15 NORTH**RIVER, FOOT OF FUL-****TON ST., NEW YORK.****United Fruit Co's
Steamship Lines**

CARRYING FAST UNITED STATES AND FOREIGN MAILS.

First-Class Passenger Service to Jamaica

Weekly Sailings from

BOSTON, PHILADELPHIA and BALTIMORE

Fare One Way, \$40.00 — Round Trip, \$75.00

For full information apply to
DIVISION PASSENGER AGENT
At either port.**"MALLORY LINE"**

(New York & Texas Steamship Company)

Steamers Leave Piers New 15, 16 East River, NEW YORK

For GALVESTON, TEXASEvery WEDNESDAY and SATURDAY, taking FREIGHT for all Points in
TEXAS, MEXICO, NEW MEXICO, ARIZONA, UTAH, KANSAS, OKLA-
HOMA, MISSOURI, COLORADO and CALIFORNIA.

Saturday's Steamer touches at Key West, Fla.

For MOBILE, ALA.A Steamer sails every FRIDAY, 3 p. m., taking FREIGHT for ALABAMA,
MISSISSIPPI, MISSOURI and the SOUTHWEST.**For BRUNSWICK, GA.**A Steamer sails every FRIDAY, 3 p. m., taking FREIGHT for all Points in
GEORGIA, FLORIDA, ALABAMA, LOUISIANA and the SOUTH and
SOUTHWEST.**PASSENGER DEPARTMENT**Six day Ocean voyage to GALVESTON, Texas, thence by rail to All points
South-west. Six days to MOBILE, Ala., through tickets to NEW
ORLEANS. 66 hours to BRUNSWICK, Ga., thence rail to Interior South-
eastern Points.An especially attractive route through famous "SEA ISLANDS" to
JACKSONVILLE, Florida.

Through Bill of Lading. Insurance at lowest rates.

C. H. MALLORY & CO., General Agents,
129 Front Street **Branch Office, 385 Broadway, New York.****BOSTON STEAMSHIP CO.**

S. S. "SHAWMUT" S. S. "TREMONT" S. S. "LYRA"

Japan, South China and Manila Steamship Line

Operated in connection with the

**Northern Pacific and Great Northern
Railway Companies.**Monthly Passenger and Freight Service from
Tacoma and Seattle, Washington.New Twin-screw American Steamships of
10,000 tons register. Exceptionally large
staterooms, all outside.OWING TO THE GREAT SIZE OF THE SHIPS,
AND THE IMMENSE CARGOES CARRIED IT HAS
NEVER BEEN NECESSARY TO USE RACKS ON
THE DINING TABLES.

Rates at any office of

NORTHERN PACIFIC RAILWAY,
GREAT NORTHERN RAILWAY,
CHICAGO, BURLINGTON & QUINCY RAILWAY,
THOMAS COOK & SONS, Tourists Agents.A. WINSOR, PRES.
Boston, Mass.F. WATERHOUSE, AGENT,
Seattle, Wash

VESSEL AND INSURANCE AGENTS.

JOHN J. BOLAND & CO.,
*Vessel and Insurance Agents.*800-804 Prudential Bldg.,
Both Phones. BUFFALO, N. Y.C. W. Elphicke. J. J. Rardon.
C. W. ELPHICKE & CO.
Vessel and Insurance Agents.
No. 6 Sherman St., CHICAGO, ILL.
Telephone, Harrison 1194.**E. J. FLEMING & CO.**
Vessel and Insurance Agents.
24-25 No. 6 Sherman St., CHICAGO.
Office: Tel., Harrison 4975. Residence: Tel. Drexel 1786.**C. P. GILCHRIST & CO.**
Vessel and Insurance Agents.
Sale and Exchange of Vessels a Specialty.
Lumber and Coal Chartering.
Full Telephone Service, Office and Residence.
(Local and Long Distance.)
411 Perry-Payne Bldg., Cleveland, O.**JOHN B. HALL,**
Vessel Agent.
17 Exchange Bldg., 202 Main St.,
Telephone, Seneca 892. BUFFALO, N. Y.W. A. Hawgood. Arthur H. Hawgood.
W. A. HAWGOOD & CO.
Vessel and Insurance Agents.
220-21 Perry-Payne Bldg., Cleveland, O.
Telephones: { Office, Main 2895.
Res. W. A. Hawgood, Doan 84-J.
Res. A. H. Hawgood, Doan 841-J. }**D. T. HELM & CO.**
Vessel and Insurance Agents.
Telephones—Office 268.
Res. 881-8.
DULUTH, - - - MINN.**SAMUEL HOLMES,**
Steamship Offices,
For Selling, Chartering and Building all
Classes Steam Vessels
Steam Vessel Circulars
Weekly Freight Circulars
Morris Bldg, 66-8 Broad St., New York.C. L. Hutchinson. W. H. McGeen.
HUTCHINSON & CO.
Vessel and Insurance Agents.
Phones: { Office, Main 2458.
Res. C. L. Hutchinson, Lake 244.
Res. W. H. McGeen, Doan 274.
1408 Rockefeller Bldg. Cleveland.**S. S. LESTER,**
Steamship Agent and Freight Broker.
Manager Steamer
ST. LAWRENCE,
83 Dalhousie St. QUEBEC, QUE.

VESSEL AND INSURANCE AGENTS.

T. R. MCCARTHY
STEAMSHIP AND FREIGHT BROKER
Chartering, Forwarding and General Com-
mission Agent; and Broker for the Sale,
Purchase and Construction of Steamers and
Sailing Vessels.Cable Address "Macarthy, Montreal."
(Watkins', Scott's Liebers and A. B. C.
Codes Used.)Shipping Agent to The Asbestos & Asbestic
Co., Ltd., of Danville, Que. The Belgo
Canadian Pulp & Paper Co., Ltd. of Shaw-
inigan Falls, Que. Edward Lloyd, Ltd.,
Paper Manufacturer, of London (Eng.).
404 Board of Trade Bldg., MONTREAL, CAN.
Correspondence Invited and Agencies Solicited.J. Mitchell. J. F. Wedow. A. Mitchell.
MITCHELL & CO.
Vessel and Insurance Agents.
508-10 Perry-Payne Bldg., Cleveland, O.
Office Tel. M. 767. Res. John Mitchell, Doan 841.
John F. Wedow, Doan 141-J.
Alfred Mitchell, Doan 218.**PARKER BROS. CO., LTD.,**
Vessel, Marine Insurance and Wreck-
ing Agents. Marine Surveyors.
Office Tel. Main 5814. Night: Main 280.
Night: Grand 1723 J.
15 Atwater St. West, DETROIT, MICH.*Insurance.*
PRINDIVILLE & COMPANY,
Average Adjusters.
Insurance Brokers.
12 Sherman Street, CHICAGO.
Representing: Johnson & Higgins, New York.**W. C. RICHARDSON,**
Vessel Owner and Broker and
Marine Insurance Agent.
420-421 Perry Payne Building,
CLEVELAND, O.
Office Tel., 888. Residence Tel., 2088D. Sullivan. F. J. Sullivan.
D. SULLIVAN & CO.
Vessel Agents.
Marine Insurance.
2-4 Sherman St., CHICAGO, ILL.
Office Tel., Harrison 2847. Res. Ashland 2438.**MARINE INSURANCE,**
by
WILLIAM GOW.
Price, \$1.50
THE PENTON PUB. CO.,
Cleveland, O.**NAVAL ARCHITECTURE,**
by
THOS. H. WATSON.A manual on laying off iron and steel ves-
sels. Valuable for naval architects as well as
beginners in ship yards.Price, \$5.00
Order from
THE PENTON PUB. CO.,
Cleveland, O.

PROCTORS IN ADMIRALTY.

WILLIAM F. CARROLL,
Lawyer and Proctor in Admiralty
Twenty years' general practice State and
Federal Courts, Minnesota, New
York and Illinois.
613-59 Dearborn St. Chicago, Ill.
Phone 4232 Central**ALBERT J. GILCHRIST,**
Proctor in Admiralty.
604 Perry Payne Building,
CLEVELAND, O.**GOULDER, HOLDING & MASTEN,**
Law Offices.
H. D. Goulder. S. H. Holding. F. S. Masten.
Perry Payne Building,
CLEVELAND, O.**HOYT, DUSTIN & KELLEY,**
Lawyers and Proctors in Admiralty.
Offices, 702 Western Reserve Building,
CLEVELAND, O.**JENKINS, RUSSELL & EICHELBERGER,**
Attorneys-at-Law
and Proctors in Admiralty.
1520 Rockefeller Bldg. CLEVELAND.**C. E. KREMER,**
Counselor at Law and
Proctor in Admiralty.
Suite 821-822 New York Life Bldg.,
CHICAGO, ILL.**RAY G. MacDONALD,**
Attorney-at-Law and
Proctor in Admiralty.
1018 Hartford Building,
Telephone, Central 2484 CHICAGO, ILL.**SHAW, WARREN, CADY & OAKES,**
Attorneys-at-Law.
and Proctors in Admiralty,
Union Trust Bldg, DETROIT, MICH.**WHITE, JOHNSON, McCASLIN & CANNON,**
Attorneys-at-Law and
Proctors in Admiralty.
Williamson Bldg., CLEVELAND, O.**HAND BOOK**
OF
ADMIRALTY LAW,
by
ROBT. M. HUGHES,
Price, \$3.75
THE PENTON PUB. CO.,
Cleveland, O.

PROFESSIONAL.

ROBERT W. HUNT & CO.,

*Bureau of Inspection.
Tests and Consultation.*

1121 The Rookery, CHICAGO.
Monong. Bank Bldg., PITTSBURG.
66 Broadway, NEW YORK.

Inspectors of shipbuilding material and machinery. Inspectors of all materials. Duty tests of engines and boilers. Physical and chemical laboratories.

PROFESSIONAL.

James Nacey. Alexander Hynd.

NACEY & HYND,
*Marine Architects.
Mechanical Draughtsmen.
Consulting Engineers.*

Specifications and designs for all descriptions of marine vessels, engines and boilers. Supervision of construction and repairs. Damage and other surveys carefully attended to.

Agents for Marine Specialties.

208-9 Western Reserve Building,
CLEVELAND, O.
Phone, Main 8389 J.

PROFESSIONAL.

W. J. WOOD,

Naval Architect, Consulting Engineer.

Prepares designs or working drawings and specifications for all classes of vessels and superintends construction and repairs. Surveys damaged property and estimates cost of repairs. Arbitrator and court expert.

FIRE BOATS A SPECIALTY.

Complete Plans furnished for Steel, Composite or Wooden Vessels.

921 Postal Telegraph Bldg.

Tel. Harrison 1020.

CHICAGO.

JOSEPH KIDD,

*Marine Architect and Surveyor.
Consulting Ship Builder and Engineer*

Over thirty years' experience. Specifications, designs and estimates. Superintendence of construction and repairs. Damage and other surveys carefully attended to. Negotiations for the building, charter or sale of all kinds of vessels and machinery.

610 Board of Trade,
DULUTH, MINN.

FRED P. BELCHER,
Vessel and Insurance Agent,
430 Grain Exchange,
WINNIPEG, MAN.
P. O. Box 230.

JUST PUBLISHED

CLASS BOOK OF
NAVAL ARCHITECTURE
BY W. J. LOVETT

Illustrated Price \$2.50
Order from Marine Review, Cleveland

**NAVAL ARCHITECTS' AND
ENGINEERS' DATA BOOK,**
By T. H. WATSON.
Price, \$1.50
THE PENTON PUB. CO.,
Cleveland, O.

BRITISH ADMIRALTY CHARTS

The latest Editions of Charts, Plans and Sailing Directions published by the British Admiralty. Can be obtained from Admiralty Agent by Appointment.

J. D. POTTER,

OFFICIAL CATALOGUE
OF CHARTS (380 pages) 1s.

145 MINORIES
LONDON, ENGLAND
An abridged Catalogue of Charts of
Nautical Books (free on application.)

**ABRAM SMITH & SON,
ALGONAC, MICH.**

Wooden Ship Building and Rebuilding.

Before placing your work we will be pleased with an opportunity to quote YOU our prices.



Outfit for Lake Steamers a specialty.

THOMAS DREIN & SON, Builders, Tatnell St. below Railroad
WILMINGTON, DEL.

**METALLIC LIFE BOATS AND
RAFTS, YACHTS AND
PLEASURE BOATS
LIFE PRESERVERS**

**SAFETY FIRE
BUCKET TANK**

An appliance that requires no attention—
Always ready for immediate use.

NOTHING TO GET OUT OF ORDER

A Chemical Solution that cannot

**FOUL, FREEZE
or EVAPORATE**

Indorsed by all Insurance Companies.

Used by
Penn. R. R. International Nav. Co.
Erie R. R. Hamburg Am. Line
C. R. R. of N. J. North German Lloyd

SAFETY FIRE EXTINGUISHER CO.
29 W. 42d St., New York.



John Donnelly, Sr., Pres.
H. B. Folger, Treas.

John Donnelly, Jr., Vice-Pres.
Thos. Donnelly, Secy.

**THE
DONNELLY SALVAGE & WRECKING CO., LTD.**
KINGSTON, ONT.

DIVERS, STEAM PUMPS, TUGS, ETC.
SUPPLIED ON SHORTEST NOTICE.

Quintard Iron Works Company

Office 742 E. 12th St., NEW YORK.

Manufacturers of

MARINE ENGINES, BOILERS, ETC.

Gas Works Apparatus. Sugar, Cement, Mining, Dredging
and all kinds of machinery

N. F. PALMER, President STEVENSON TAYLOR, Vice Pres.
GEO. Q. PALMER, Treas. and Gen. Mgr.

THE "GAYNOR"**Improved Cork Block Life Preservers**

Wired and unwired. The new standard preservers. Best on the market. Unrivalled in reliability, construction, strength, quality and durability of materials. Approved by the Board of Supervising Inspectors of the Steamboat Inspection Service, at its meeting in Washington, D. C. December, 1904.

Manufactured by **THE NATIONAL CORK CO.**
261 Lorimer St., Brooklyn, N. Y.

Who will send circulars and prices. Or write to
T. F. GAYNOR, 18 Broadway, N. Y., for particulars.

GREAT LAKES REGISTER

FOR THE
CLASSIFICATION OF STEEL AND WOODEN VESSELS.



Estb. 1828

Estb. 1896

COMBINED AND ISSUED IN CONNECTION WITH
BUREAU VERITAS
INTERNATIONAL REGISTER OF SHIPPING.

THE RATINGS OF GREAT LAKES REGISTER GO BEFORE AND ARE ACCEPTED BY THE LEADING UNDERWRITERS OF AMERICA AND EUROPE. VESSELS BUILT UNDER THE SUPERVISION OF ITS SURVEYORS WILL RECEIVE SPECIAL RATING, AND WILL ALSO BE PUBLISHED IN BUREAU VERITAS INTERNATIONAL REGISTER OF SHIPPING.

PLANS AND SPECIFICATIONS FURNISHED.

GREAT LAKES REGISTER SURVEYORS ARE ESTABLISHED AT ALL THE PRINCIPAL PORTS ON THE GREAT LAKES.

F. D. HERRIMAN, SURVEYOR GENERAL,
320-322 Perry-Payne Building, CLEVELAND, O.

FORE RIVER SHIPBUILDING CO.

Steel Ship and Marine Engine Builders.

CONTRACTORS FOR

U. S. Torpedo Boat Destroyers Lawrence and Macdonough.
U. S. Protected Cruiser Des Moines.
U. S. Battleships New Jersey and Rhode Island.
U. S. Steam Light-Vessel No. 72.

Office and Works, QUINCY, MASS., U. S. A.

W. & A. FLETCHER CO.

NORTH RIVER IRON WORKS.

MARINE ENGINES, BOILERS, Etc.

Hudson, 12th and 14th Sts., HOBOKEN, N. J.

Take Ferry from foot of West 22nd St., New York.

The Atlantic Works, EAST BOSTON, Massachusetts.

BUILDERS OF

Steamships, Steam Yachts, Tow Boats, Etc.

Marine Engines, Boilers and Tanks.
Heavy Machinery and Plate Iron Work.
THREE MARINE RAILWAYS.

Practical Marine Engineering

By PROF. W. F. DURANT

For Marine Engineers and Students, with aids for applicants for marine engineers' license.

PRICE \$5.00

FOR SALE BY

THE MARINE REVIEW, Cleveland

CHARLES E. PECK.

WILLIAM A. PRIME.

CHAS. E. & W. F. PECK,

Insurance Brokers. Average Adjusters.

ESTABLISHED 1870.

NEW YORK, 58 William Street.

BOSTON, 153 Milk St.

BUFFALO, 906 The Fidelity Bldg.

CLEVELAND, 1107-8 Williamson Bldg.

CHICAGO, 1115-16 Royal Insurance Bldg.

REPRESENTED BY

C. T. BOWRING & CO., (Insurance) LTD.,

5 and 6 Billiter Ave., LONDON,
and at "LLOYD'S" LONDON.

HULLS and CARGOES.

We place insurances in the most advantageous markets, employing, in the interest of our clients and with equal facility, all Foreign and Home companies, at the best procurable rates and terms.

We Represent Only the Assured.

CRANE VALVES

ESTABLISHED 1855

GEO. STRATFORD OAKUM CO.

JERSEY CITY, NEW JERSEY.

Established
1860



Manufacturers
of all grades of

Oakum

Spun
Cotton

FOR SALE AT SHIP CHANDLERS EVERYWHERE.

The Martin-Barriss Co.

654 Seneca Street CLEVELAND, OHIO

IMPORTERS AND MANUFACTURERS OF

MAHOGANY

WHITE MAHOGANY

and all Native Cabinet Woods

High Grades of Kiln Dried Woods for Cabin Work and Inside Trim

WHITE OAK TIMBERS AND PLANK

Constantly on Hand and Sawed to Order on Short Notice

Hyde Windlasses and Capstans



Steamship Minnesota equipped with Hyde Windlass and Capstans.

Selected for the Minnesota and Dakota of the Great Northern Steamship Co.'s fleet—the largest vessels ever built in the United States. They are also being installed on nearly all of the vessels now building for the Navy Department, Revenue Cutter service, Lighthouse Board and the United States Coast Survey.

Reason—Their Superiority

Send for Illustrated Catalog.

HYDE WINDLASS COMPANY

BATH, MAINE

ALPHABETICAL INDEX OF ADVERTISERS IN THE MARINE REVIEW.

The star (*) indicates that the advertisement appears alternate weeks. For addresses see advertisements on pages noted.
The dagger (†) indicates that advertisement appears once a month.

Almy Water Tube Boiler Co. 41	East End Boiler Works 41	Lester, S. S. 46	Raynor, J. 43
American Injector Co. 3	Elphicke, C. W. & Co. 46	Link Belt Machinery Co. 9	Red Star Line 45
American Line 45	Falls Hollow Staybolt Co. 52	Lockwood Mfg. Co. 50	Rice, Henry 47
American Ship Building Co. 4	Fitz-Simons & Connell Co. 42	"Long Arm" System Co. †	Richardson, W. C. 46
American Ship Windlass Co. 2	Fix's Sons, S. 50	Lovejoy, H. O. 47	Ritchie & Sons, E. S. 44
Armstrong Cork Co. 52	Fleming & Co., E. J. 46	L. S. & M. S. Ry. 51	Roberts Safety Water-Tube
Ashton Valve Co. 35	Fletcher Co., W. & A. 48	Lunkenheimer Co. 11	Boiler Co. 11
Atlantic Works 48	Fogg, M. W. 50		Roelker, H. B. 50
Atlantic Works, Inc. †	Fore River Shipbuilding Co. 48		Ross Valve Co. 50
Babcock & Wilcox Co. 7	Gaynor, T. F. 47	McCarthy, T. R. 46	Safety Car Heating & Lighting
Baker, Howard H. & Co. 52	General Electric Co. 52	McCurdy, Geo. L. 35	Co. 7
Blake, Geo. F. Mfg. Co. 50	Georgian Bay Engineering Wks. 47	McMyler Mfg. Co. 43	Safety Fire Extinguisher Co. 47
Belcher, Fred P. 47	Gilchrist, Albert J. 46	MacDonald, Ray G. 46	Scherzer Rolling Lift Bridge Co. 44
Boland, J. J. 46	Gilchrist & Co., C. P. 46	Mallory Line 45	Schrader's Son, A. 50
Bonner & Co., Wm. T. †	Goulder, Holding & Masten 46	Marine Iron Co., Bay City, Mich. 47	Shaw, Warren, Cady & Oakes. 46
Boston & Lockport Block Co. 45	Great Lakes Dredge & Dock Co. 42	Marine Iron Works 3	Shelby Steel Tube Co. 44
Boston Steamship Co. 2	Great Lakes Engineering Works 14	Marine Mfg. & Supply Co. 43	Sheriffs Mfg. Co. 44
Bourne-Fuller Co. 35	Great Lakes Register. 48	Martin-Barriss Co. 48	Shipping World *
Bowers, L. M. & Co. 41	Great Lakes Towing Co. †	Maryland Steel Co. 10	Shipowners' Dry Dock Co. 50
Breymann & Bros., G. H. 42	Greacen-Derby Engineering Co. 3	Mayo & Bailey 9	Smith & Son, Abram 47
Brown Hoisting Machinery Co.,		Merchants' Montreal Line 44	Smith Co., L. P. & J. A. 42
Inc. 2	Hall, John B. 46	Mietz, Aug. †	Smith Coal & Dock Co., Stanley B. 9
Buffalo Dredging Co. 42	Hanna & Co., M. A. 43	Milwaukee Dry Dock Co. 5	Smith, Stanley B., & Co. 9
Buffalo Dry Dock Co. 5	Hawgood & Co., W. A. 46	Mitchell & Co. 46	Smooth-On Mfg. Co. 51
Bunker, Edw. A. 51	Helm & Co., D. T. 46	Morse & Son, A. J. 50	Standard Oil Co. 51
	Hickler Bros. 42	Mosher Water-Tube Boiler Co. 41	Starke Dredge & Dock Co., C. H. 43
	Holmes, Samuel 46	Moulton Steering Engine Co. 44	Stirling Co. *
Carroll Wm. F. 46	Hoyt, Dustin & Kelley. 46	Nacey & Hynd 47	Stratford Oakum Co., Geo. 48
Chase Machine Co. 11	Hunt & Co., Robert W. 47	National Cork Co. 47	Sturtevant, B. F. Co. 52
Chicago Ship Building Co. 4	Hutchinson & Co. 46	Newport News Ship Building &	Sullivan, M. 43
Cleveland & Buffalo Trans. Co. 44	Hyde Windlass Co. 49	Dry Dock Co. 6	Sullivan & Co. 46
Cleveland City Forge & Iron Co. 51		New York & Cuba Mail S. S. Co. 45	Superior Ship Building Co. 4
Continental Iron Works 52	International Mercantile Marine	New York Shipbuilding Co. 12	Sutton Co., C. E. 50
Cory, Chas. & Son 52	Co. 45	Nicholson Ship Log Co. 43	
Cowing, John P. 52	Ironville Coal and Dock Co. 43	Northwestern Steam Boiler &	
Craig Ship Building Co. 5		Mfg. Co. 41	Taylor Water-Tube Boiler Co. 41
Cramp, Wm. & Sons, S. & E. B.	Jenkins Brothers. 52	Otis Steel Co. 3	Thropp, J. E. & Sons Co. 41
Co. 8	Jenkins, Russell & Eichelberg. 46		Trout, H. G. 44
Crandall & Son, H. I. 11		Parker Bros. Co. 46	Truscott Boat Mfg Co. 7
Crane Co. 48-50	Kahnweiler's Sons, David 51	Parsons, Ralph M. †	
	Katzenstein & Co., L. 51	Peck, Chas. E. & W. F. 48	United Fruit Co. 45
Dearborn Drug & Chemical Wks. 9	Kidd, Joseph 47	Penberthy Injector Co. 3	Upson-Walton Co. 52
Delannay, Belleville & Co. 35	Kieley & Mueller. 2	Pickands, Mather & Co. 43	
Delaware River Iron S. B. & E.	Kingsford Foundry & Machine	Pittsburg Coal Co. 9	Walker, Thomas & Son 2
Works 51	Works 41	Potter, J. D. 47	Ward Line 45
Detroit Ship Building Co. 4	Kremer, C. E. 46	Power Specialty Co. 5	Watson-Stillman Co. 51
Dixon Crucible Co., Joseph. 44		Prindville & Co. 46	White, Johnson, McCaslin &
Donnelly Salvage & Wrecking Co. 47	Lake Superior Contracting &		Cannon 46
Drein, Thos. & Son. 47	Dredging Co. 42	Quintard Iron Works Co. 47	Wood, W. J. 47
Dunbar & Sullivan Dredging Co. 42	LeMois Scientifique et Industrial *		Woodhouse Chain Works *

NINETEENTH ENLARGED EDITION; OVER 1,400 PAGES.

**THE SHIPPING YEAR BOOK
WORLD 1905**

EDITED BY MAJOR JONES AND A STAFF OF EXPERTS.

**The
Work
Embraces**

- I.—Customs Tariffs of All Nations.
- II.—A Port Directory of the World.
- III.—Board of Trade Rules and Regulations.
- IV.—Load Line Tables, Sailing Rules, Lights, Signals.
- V.—Digest of Shipping Laws. Much other Useful Information

A LARGE MAP OF THE WORLD, especially designed by J. G. Bartholomew, F. R. G. S., F. R. S. E., is supplied in a pocket in the cover. Introduced by a RETROSPECTIVE VIEW of 1904.

Crown 8vo., cloth. Price, post free: In the United Kingdom, 5s; foreign countries, 6s, except in the United States where the Sole Agents for 1905 are

THE DERRY-COLLARD CO., 256-7 Broadway, NEW YORK.

THE TIMES.—"The information given is wide in scope, and varied in matter, dealing with almost every subject of interest connected with trade, commerce, and navigation. About one-third of the volume is devoted to the tariffs of all nations, which are given in full.

DAILY TELEGRAPH.—"A more comprehensive handbook in its special line for the merchant's desk there could scarcely be."

NEW YORK TRIBUNE.—"This compact book of upwards of twelve hundred pages, published by 'The Shipping World,' of London, contains an immense amount of information of value to the mariner and shipper."

PALL MALL GAZETTE.—"The Shipping World Year Book" would be very much missed if it failed to put in a regular appearance, but fortunately there is no danger of that. The comprehensive retrospect of shipping affairs deserves special attention, and will repay careful study."

GLASGOW HERALD.—"The book more than ever commands the confidence of those large mercantile classes who have been accustomed to consult its pages for world-wide information, and always with success."

NEWCASTLE CHRONICLE.—"Those who refer to it will find all matters appertaining to the business of the shipowner brought right up to date."

LIVERPOOL JOURNAL OF COMMERCE.—"Filled from cover to cover with information absolutely indispensable to all engaged in the over-sea commerce of this country."

TIMBER.—"There is not another book of its size in the world which contains so much information worth having."

SOUTH WALES DAILY NEWS.—"Major Jones, the capable editor, has anticipated the public attention now being devoted to tariffs, and those of all nations and of the Colonies have been included and revised up to the last hour of publication."

1628

THE SHIPPING WORLD OFFICES, Effingham House, Arundel-street, Strand, London, W. C.

THE ALLEN DENSE-AIR ICE MACHINE

Contains no chemicals, only air. Proven by many years' service in the tropics on United States men-of-war, steam yachts and passenger steamers. A hundred are in daily service on steamers.

H. B. ROELKER, 41 Maiden Lane, NEW YORK.

Consulting and Constructing Engineer.

Designer and Manufacturer of Screw Propellers.

**THE SHIPOWNERS DRY DOCK CO.
CHICAGO, ILL.**

Building and Repairing of Steel and Wooden Ships with economy and dispatch.

Yard and Dry Docks: Halstead St. and North Branch.
Largest Dry Dock: 480 ft. on keel blocks.

Office, 381 No. Halstead St. Phone, North 1658.

CRANE FITTINGS

Improved Bolt Helmet

Established 1844
A. SCHRADER'S SON, Inc.
32 Rose Street, NEW YORK
Manufacturer of

Submarine Armor and Diving Apparatus

We carry a complete stock of Dresses, Hose and Repair Sundries.

All orders filled day received Write for our prices

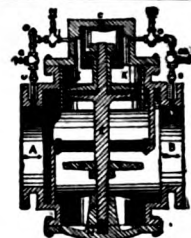
**Water Filters, Regulators
and Engines.**

We make **Pressure Regulating Valves** for all purposes, steam or water.

Our **Feed-Water Filter** will keep oil out of your boiler.

We can interest you if you use a condenser.

Water Engines for Pumping Organs



**Water Works
Regulating Valve**
Has no peer. Ask for list of Water Works using our valves.

THE **ROSS VALVE CO.** TROY N. Y.

The Lockwood Manufacturing Co.

EAST BOSTON, MASS.

ENGINEERS AND MACHINISTS.

Builders of Steamships, Tow Boats and Marine Engines.

Repairing of Hulls and Machinery.

The C. E. Sutton Company

Toledo, Ohio, U. S. A.

Manufacturers of

PUNCHES and SHEARS, FORGING MACHINES, STEEL and IRON GREY CASTINGS

Marine Castings a Specialty

M. W. FOGG

**Mattresses
and Cushions**



202 Front St.

NEW YORK CITY.

ORAM FIX

ESTABLISHED 1860

J. W. FIX

S. FIX'S SONS

SUCCESSORS TO S. FIX & SON.

Steam Flue Welding Works

Our work stands government test. Our Welds are perfectly smooth.
Write us for prices.

COR. LEONARD AND WINTER STS.

CLEVELAND, O.

A. J. MORSE & SON

140
Congress St.

BOSTON

All of the latest and largest LAKE STEAMSHIPS are completely equipped with

**BLAKE DUPLEX AND SIMPLEX PUMPS
SPECIAL MARINE**

New Marine Catalog ready about July 1st.

Geo. F. Blake Mfg. Co.,

114 Liberty Street,

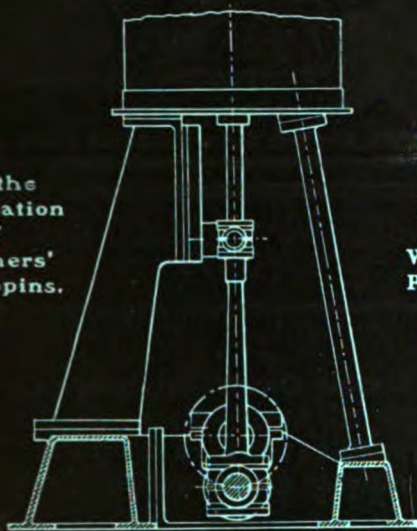
New York City.

Vacuum

No. 1 MARINE ENGINE OIL

for the
Lubrication
of
Steamers'
Crank-pins.

Holds
the
World's
Record.



STANDARD OIL CO., of New York

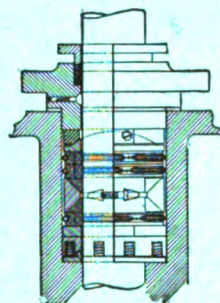
ROACH'S SHIP YARD.



Ship
Building
in all its
Branches

Builders of
STEAMSHIP AND MARINE MACHINERY.

Delaware River Iron Ship Building & Engine Works,
Chester, Pa.



Katzenstein's Self-Acting Metal Packing

For PISTON RODS, VALVE STEMS, etc. of every description for Steam Engines, Pumps, etc., etc. Adopted and in use by the principal Iron Works and Steamship Companies in this and foreign countries.

FLEXIBLE TUBULAR METALLIC PACKING, for slip-joints on Steam Pipes, and for Hydraulic Pressure; also METAL GASKETS for all kinds of flanges and joints.

For full particulars and reference, address

L. KATZENSTEIN & CO.

GENERAL MACHINISTS, BRASS FINISHERS, ENGINEERS' SUPPLIES.
358 West street, New York.

Neversink Cork Jackets and Life Belt

Warranted 24 pounds. Buoyancy and full weight of Cork, as required by U. S. Inspectors.

Safest Consolidated Cork Life Preservers. Cheapest

Approved and adopted by U. S. Board of Supervising Inspectors. Also adopted by the principal Ocean, Lake and River Steamer Lines as the only Reliable Life Preserver. Awarded four Medals by World's Columbian Exposition.



Metallic and
Wooden
Life Boats.



Metallic Life Rafts. Marine Drags.

Manufacturers of Woolsey's Patent Life Buoy—the lightest, cheapest and most compact life raft known.

DAVID KAHNWEILER'S SONS,

Fox Building, Cor. Franklin Sq. and Dover Street,
NEW YORK CITY.



**LIGHT
STRONG
DURABLE**

**CLOTH
THAT'S IN
DEMAND**

TRADE MARK

Wilford's Waterproof Cloth is made of twisted pure flax thread. It is pliable—will not crack, and much stronger than cotton. Impenetrable by salt or fresh water. Suitable for Tarpaulins, sail, hatch or boat covers, etc. A superior waterproof cloth. Test its merits.

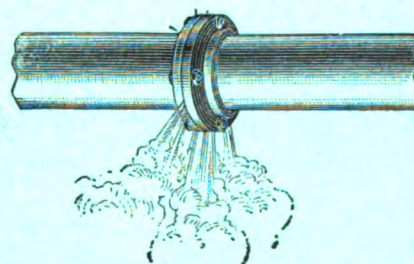
EDWARD A. BUNKER

Sole Agent for the United
States and Canada

P. O. BOX 1579, NEW YORK



IRON OR STEEL FORGINGS FINISHED COMPLETE, ROUGH MACHINED OR SMOOTH FORGED ONLY. OF ANY WEIGHT.
COUPLING LINKS AND PINS. PRESSED WROUGHT IRON TURNBUCKLES. CAR IRON SPECIALTIES.



**Smooth-On
Elastic
Cement**
will stop leaks

Write for new instruction book

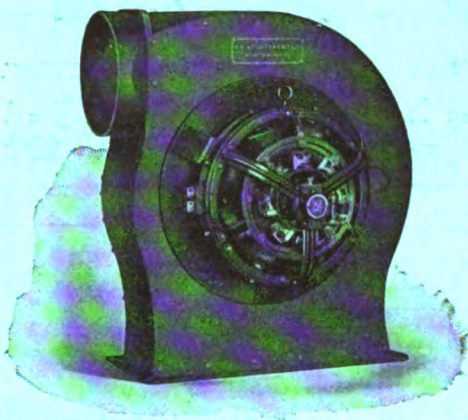
SMOOTH-ON MFG. CO.

JERSEY CITY, N. J., U. S. A.

Sturtevant Electric Fans for Ship Ventilation

represent the perfection demanded by the U. S. Navy Dept. specifications.

Built in special designs to meet specific requirements.



B. F. STURTEVANT CO.,

Boston, Mass.

General Office and Works, Hyde Park, Mass.
New York Philadelphia Chicago London

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fans, Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Fuel Economizers; Forges, Exhaust Heads, Steam Traps, Etc.

494

Jenkins Bros. Valves

are the original Renewable Disc Valves, and are unquestionably the best for steady every-day service. No matter what may be the conditions, they always prove to be durable and reliable, giving the most perfect satisfaction with minimum amount of attention and repair.



Send for booklet,

"Valve Troubles and How to Avoid Them."

JENKINS BROS., New York, Boston, Philadelphia, Chicago, London. 7

General Electric Company

Marine electrical equipments of all kinds—from an incandescent lamp to a marine generating set.

Principal Office: SCHENECTADY, N. Y.

Sales offices in all large cities

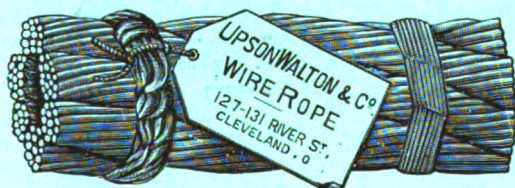
636

We handle and keep in stock

WIRE ROPE

of all sizes and lengths suitable for every purpose.

We make a specialty of cutting, splicing and fitting it for every possible requirement.



FALLS HOLLOW STAYBOLT CO.
ANY SIZE, OUTSIDE OR INSIDE DIAMETER.
AVERAGE LENGTH OF HOLLOW BARS EIGHT TO TEN FEET.
STAYBOLT BARS
BOTH HOLLOW AND SOLID,
MADE OF BEST QUALITY DOUBLE REFINED CHARCOAL IRON OR STEEL.
CUYAHOGA FALLS, O. U.S.A.

Makers of only the Highest Quality of Staybolt Material, in Hollow and Solid Bars, from the Best Double-Refined Charcoal Iron or Steel.

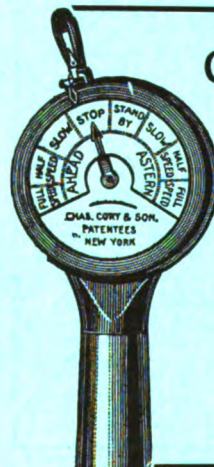
FALLS HOLLOW STAYBOLT IRON

Is the only Reliable Flexible Staybolt in the World.

The Only Staybolt Iron which responds in service to the expansion and contraction of fire box; which relieves the material in molecular strains; which is self protective from burning; which does not make the side sheets crack; which earns its own cost in oxygen through it to the fire; always sure in giving warning of breakage.

The Staybolt which lasts longest, requires least repairs, gives longest life to the fire box, and the longest service in the engine on the rails.

In use by Leading Railways of the United States, Canada, Mexico, Japan and Norway. Also by Marine Engineers and the United States Government. And by the Manufacturers of Mining Drills and by others requiring absolutely reliable material.



Chas. Cory & Son

Manufacturers of

Mechanical and Electrical Telegraphs and Indicators. Engine Bells and Electric Call Bells.

278-279 Division St.
NEW YORK CITY.

LIFE PRESERVERS—BUOYS

ACME. SOLID CORK. Each Preserver stamped by U. S. Inspector guaranteeing proper buoyancy. Cork Filled Yacht Fenders. Cork Mooring Buoys. Material and Finish Guaranteed.

Orders filled promptly.

ARMSTRONG CORK COMPANY

Boston New York Philadelphia Pittsburg
Chicago St. Louis Baltimore

HOWARD H. BAKER & CO. SHIP CHANDLERS and SAIL MAKERS

18 to 26 Terrace,

BUFFALO, N. Y.